

RH10/RH11

MASSBUS DIAGNOSTIC
MD-11-DZRHB-C

EP-DZRHB-C-DL-B

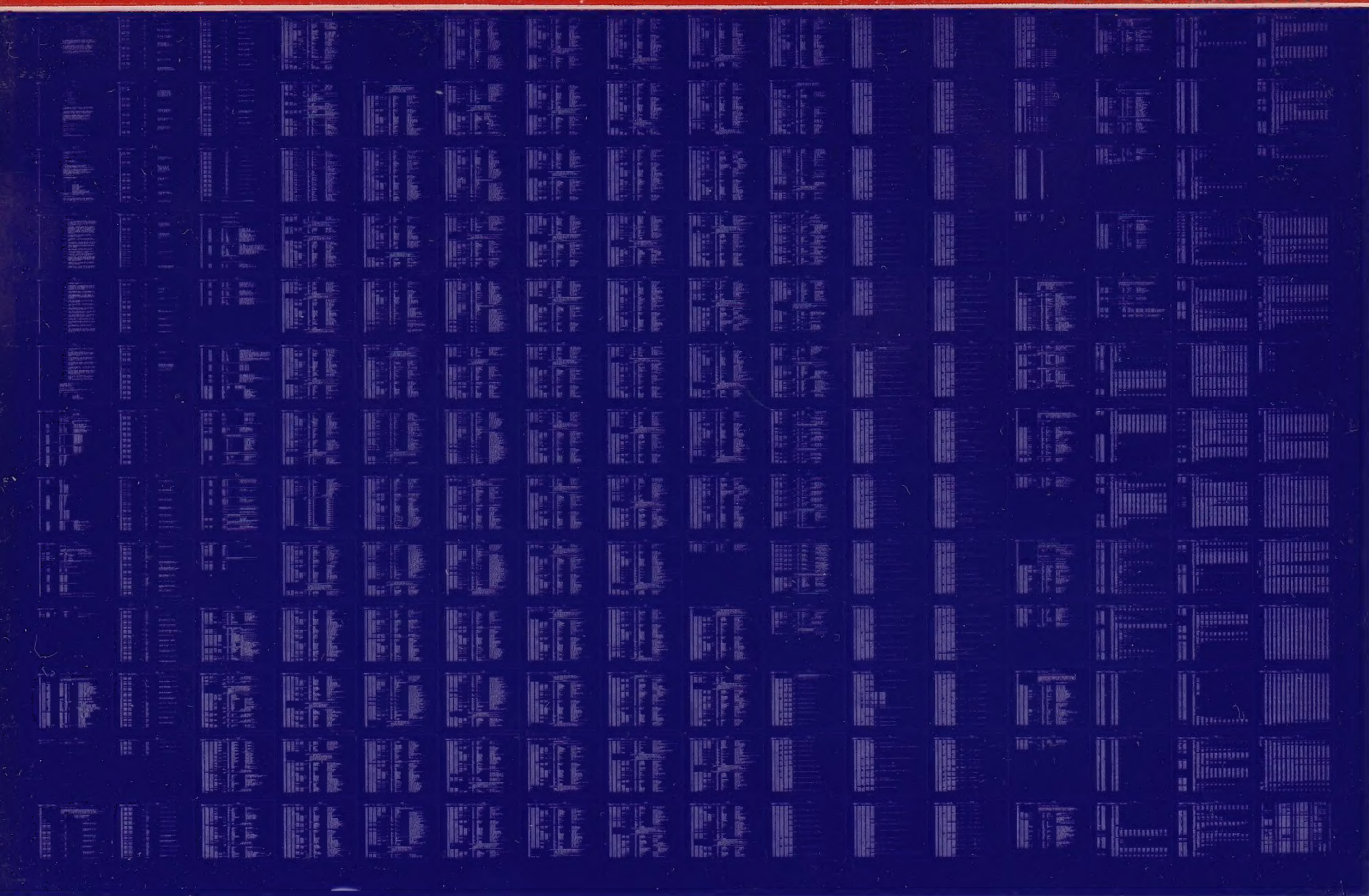
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RH10/RH11

MASSBUS DIAGNOSTIC
MD-11-DZRHB-C

EP-DZRHB-C-DL-B

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DEC 1976

digital

MADE IN USA

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZRMB-C-D
PRODUCT NAME: MASSBUS I/O AND CONTROLLER DIAGNOSTIC
DATE: DECEMBER, 1976
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: DIAGNOSTIC ENGINEERING

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TABLE OF CONTENTS

1.0	ABSTRACT
2.0	REQUIREMENTS
2.1	HARDWARE
2.2	SOFTWARE
3.0	PROGRAM DESCRIPTION
3.1	SWITCH OPTIONS
3.2	SYSMAC ROUTINES
4.0	TEST DESCRIPTIONS

1.0 ABSTRACT

THIS PROGRAM WAS CREATED TO TEST RH11 AND RH70 MASSBUS CONTROLLERS WITH AN RH11-TB (MASSBUS SIMULATOR) ATTACHED TO IT.

TO GET MAXIMUM RESULTS FROM THE TEST ALLOW PASS1 TO BE COMPLETED SO THAT ALL INFORMATION POSSIBLE HAS BEEN REPORTED ABOUT ANY ERROR, THEN LOOP ON DESIRED ERRORS.

IN THE EVENT OF AN ERROR, IN ORDER TO GIVE COMPLETE INFORMATION ALL ERROR BITS ARE CHECKED TO SEE THAT NO OTHER ERROR OCCURED. IF AN ERROR OCCURED IT WILL BE REPORTED BY "WHYFO" AND "WHATBIT". WHYFO TELLS WHAT REGISTER THE ERROR BIT WAS FOUND IN AND WHATBIT TELLS WHAT THE NUMBER OF THE ERROR BITS WHERE.

EXAMPLE:

RHCS1 HAS AN ERROR BIT SET

THESE ARE THE NUMBER OF THE EXTRA BITS
15 14

RHCS2 HAS AN ERROR BIT SET

THESE ARE THE NUMBER OF THE EXTRA BITS
15

END EXAMPLE

THIS PRINTOUT SAYS THAT TRE AND SC IS SET IN RHCS1 AND THAT DATA LATE WAS SET IN RHCS2.

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THIS IS DONE TO GIVE ONLY VALID DATA(ERROR)
NOT A COMBINATION OF GOOD AND BAD DATA.
REQUIREMENTS

2.1 HARDWARE

THIS PROGRAM ASSUMES THE FOLLOWING IS IN PROPER WORKING
CONDITION:

1. CPU
2. 16K OF CORE MEMORY
3. RH11-TB MASSBUS SIMULATOR

2.2 SOFTWARE

AFTER LOADING PROGRAM THE STARTING ADDRESS IS 200
IF THE RH'S ARE JUMPERED FOR THE TESTER
SO THAT REGISTER ADDRESSES MAY BE CONFIGURED FOR TESTING
THE RH'S
IF NO CHANGES IN ADDRESS ARE MADE AN ALTERNATE STARTING
ADDRESS OF 204 CAN BE USED BUT THE PROGRAM MUST HAVE BEEN
STARTED AT LEAST ONCE AT ADDRESS 200 OR 210.
STARTING ADDRESS 210 ALLOWS YOU TO SPECIFY THE BASE
ADDRESS, VECTOR ADDRESS, AND HOW MANY REGISTERS YOU
ARE JUMPERED FOR (A MAXIMUM OF 36).

3.0 PROGRAM DESCRIPTION

THIS PROGRAM WAS ASSEMBLED WITH MACY11 USING PDP-11 MAINDEC
SYSMAC PACKAGE (DZQAC-3).

3.1 SWITCH OPTIONS

SWITCH -----	USE ---
15	HALT ON ERROR
14	LOOP ON TEST
13	INHIBIT ERROR TYPEOUTS
11	INHIBIT ITERATIONS
10	BELL ON ERROR
9	LOOP ON ERROR
8	LOOP ON TEST IN SWR(7:0)
1	TO BE USED IF DUAL PORT NOT USED
0	INHIBITS THE PRINTING OF WATBIT

13, 8, AND 0 INHIBIT WATBIT PRINTOUT

3.2 SYSMAC ROUTINES (USED)

EQUATE, CATCH, COMMON TAGS, SWRHI, SWRLO, SETUP SCOPE,
TYPE, TRAP, READ, ERROR, TYPE OCTAL, TYPE DECIMAL, POWER,
EOP, KT11, HEADER, ERROR TYPE, READ OCTAL, ACT11 HOOKS.

THESE ARE THE SYSMAC ROUTINES INCORPORATED IN THIS PRO-

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GRAM.

4.0 TEST DESCRIPTIONS

TEST 1 - THIS IS THE RH ADDRESS DECODE TEST. THIS PROGRAM WILL CHECK THAT AN RH IS ON THE BUS AND THAT A TESTER IS CONNECTED TO IT. IF NO RH IS FOUND THE OPERATOR WILL BE ALLOWED TO KEY IN THE ADDRESS FOR THE RH HE HAS CONNECTED TO THE BUS.

TEST 2 - CLEAR TEST. THIS TEST CHECKS THAT ALL ERROR BITS ARE CLEARED AFTER THE CLEAR BIT WAS LOADED INTO RHCS2 REGISTER. THIS TEST IS ALSO ENTERED AT THE LABE CLEAR AT THE END OF ALL THE ERROR BIT TESTS TO SEE THAT A CLEAR WILL CLEAR THE ERROR BIT SET. THE TEST IS ENTERED HERE IF THE ERROR BIT BEING FORCED SET DID NOT SET TO SEE IF ANY OTHER ERROR BIT DID SET.

TEST 3 - THIS TEST SEES IF THE TESTER IS CONNECTED. THIS TEST SEES IF THE DEVICE CODE IS A 40 TO SAY AN RH SIMULATOR IS ATTACHED.

TEST 4 - MC CLEAR TEST. THIS TEST WILL SEE THAT WHEN A CLEAR IS GIVEN THE WORD COUNT REGISTER REMAINS THE SAME.

TEST 5 - RHBA CLEAR TEST. THIS TEST SEES THAT WHEN A CLEAR IS GENERATED THE BUS ADDRESS REGISTER IS CLEARED.

TEST 6 - RHBAE CLEAR TEST. THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED THE BUS ADDRESS EXTENSION REGISTER IS CLEARED.

TEST 7 - RHOB CLEAR TEST. THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED OUTPUT READY IS NEGATED.

TEST 10 - PROM REGISTER DECODE TEST. THIS TEST CHECKS THAT THE PROM CAN ACCESS ALL REGISTERS.

TEST 11 - RHCS3 TEST. THIS TEST CHECKS THE READ/WRITE BITS IN THE RHCS3 REGISTER CAN BE CLEARED AND SET.

TEST 12 - RHWC BIT TEST. THIS TEST CHECKS THE WORD COUNT REGISTER TO SEE IF ALL BITS CAN BE SET AND CLEARED AND CHECKS THE REGISTER USING ALTERNATE BITS SET (52525) AND USING (125252) TO MAKE SURE IT WORKS WITH ALTERNATE PATTERN.

TEST 13 - RHBAE BIT TEST. THIS TEST TESTS THE RHBAE REGISTER ONLY IF THE RH IS AN RH70. RH11'S DO NOT HAVE AN RHBAE REGISTER.

TEST 14 - RHBA BIT TEST. THIS TEST TESTS THE BUS ADDRESS REGISTER BY FIRST ALTERNATLY SETTING AND CLEARING BITS IN THE BA REGISTER AND THEN BY USING AN

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F01

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11

MACY11 27(732) 01-OCT-76 09:03 PAGE 6

ALTERNATE BIT PATTERN (52525) AND AN OPPOSITE
BIT PATTERN (125252).

- TEST 15 - RHDB BIT TEST. THIS TEST TESTS THE RH DATA BUF-
FER REGISTER BY FIRST ALTERNATLY SETTING AND RE-
SETTING BITS IN THE RHDB REGISTER AND THEN BY USING
AN ALTERNATE BIT PATTERN (52525) AND AN OPPOSITE
ALTERNATE BIT PATTERN (125252).
- TEST 16 - RHWC OPERATIONAL TEST. THIS TEST CHECKS THAT
WHEN THE WORD COUNT REGISTER IS INCREMENTED IT IS
CARRIED TO THE HIGHEST BIT AND IS RETURNED TO ZERO.
- TEST 17 - RHBA OPERATIONAL TEST. THIS TEST CHECKS THAT
THE BUS ADDRESS REGISTER WILL CARRY THROUGH TO
THE HIGHEST BIT IN THE BUS ADDRESS EXTENSION REG-
ISTER OR BIT A17 IN THE RHCS1 REGISTER AFTER IT IS
INCREMENTED.
- TEST 20 - NEM, TRE, SC BIT TEST. THIS TEST WILL CHECK
THAT NON-EXISTING MEMORY WILL SET THE TRE AND SC
BIT IN RHCS1 REGISTER.
- TEST 21 - WCE, TRE, SC BIT TEST. THIS TEST WILL CHECK
THAT TRE AND SC SET WHEN A WRITE CHECK ERROR OCCURS
(WCE).
- TEST 22 - MDPE, TRE AND SC BIT TEST. THIS TEST CHECKS
THAT MDPE CAN BE SET IN RHCS2, AND THAT MDPE SETS
TRE AND SC IN THE RHCS1 REGISTER.
- TEST 23 - UPE, TRE, SC ERROR TEST (RH11). THIS TEST CHECKS
THE UPE BIT IN RHCS2 TO SEE IF IT SETS AND WHEN IT
IT SETS IS TRE AND SC BITS SET IN RHCS1.
- TEST 24 - UPE, TRE, SC ERROR TEST (RH70). THIS TEST CHECKS
THE UPE BIT IN RHCS2 TO SEE IF IT SETS AND WHEN
IT SETS IS TRE AND SC BITS SET IN RHCS1.
- TEST 25 - NED BIT TEST. THIS TEST WILL CHECK THAT NED
(NON-EXISTANT DRIVE) SETS TRE AND SC BITS IN RHCS1.
- TEST 26 - MXF, TRE AND SC BIT TEST. THIS TEST WILL CHECK
THAT MXF (MISSED TRANSFER ERROR) WILL SET TRE AND
SC BITS.
- TEST 27 - PGE ERROR BIT TEST. THIS TEST FORCES PGE TO
SET IN RHCS2 AND VERIFYS TRE AND SC IS SET IN
RHCS1.
- TEST 30 - MXF, TRE AND SC BIT TEST (RH11 ONLY). THIS TEST
SEES IF MXF CAN BE SET BY A MOVE INSTRUCTION AND
THAT TRE AND SC ARE SET IN RHCS1. MXF CAN BE SET
THIS WAY IN AN RH11 BIT CAN NOT BE SET THIS WAY
IN AN RH70.

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GO1

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11

MACY11 27(732) 01-OCT-76 09:03 PAGE 7

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TEST 31 - MCPE AND SC ERROR TEST. THIS TEST CHECKS THAT MCPE CAN BE SET IN RHCS1 AND THAT MCPE SETS SC IN RHCS1.

TEST 32-52 - DOUBLE TESTS. THESE TESTS CHECK DBL IN RHCS3 WITH READ FWD AND REV, WRITE FWD AND REV AND WITH BAI SET IN RHCS2. OPERATION BEING PERFORMED WILL BE PRINTED OUT IN ERROR MESSAGE. RH70 ONLY.

TEST 53 - WCE EW ERROR TEST. THIS TEST CHECKS THAT WCELO WILL SET IN RHCS3 AND THAT WCE SETS IN RHCS1. IT ALSO CHECKS THAT WCEHI DOES NOT SET WITH WCELO IN RHCS3.....RH70 ONLY.

TEST 54 - WCE OW ERROR TEST (WCEHI). THIS TEST CHECKS THAT WCEHI SETS IN RHCS3 AND THAT WCE SETS IN RHCS1, IT ALSO TESTS THAT WCELO DOES NOT SET WITH WCEHI. (RH70 ONLY)

TEST 55 - INTERRUPT ENABLE TEST. THIS TEST VERIFYS THAT IE WILL SET IN RHCS1 AND IT WILL CAUSE AN INTERRUPT WHEN RDY IS SET.

TEST 56-75 - READ AND WRITE OPERATIONAL TESTS. THESE TESTS VERIFY ALL READ AND WRITE CODES WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD. DURING THESE TESTS THE TESTER TIMING IS MARGINED AND NO ERRORS SHOULD OCCUR.

TEST 76 - THIS IS THE LARGE TRANSFER TEST. IT TESTS THE RH 70 OR 11 DOING A 671 WORD TRANSFER FOR ERRORS

TEST 77 - THIS IS NOT A TEST BUT IS THE ROUTINE THAT ALLOWS THE DIAGNOSTIC TO TEST 4 RH'S IF PRESENT.

.TITLE MASSBUS RH70 AND RH11 DIAGNOSTIC

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*MAYNARD, MASS. 01754

*

*PROGRAM BY WN D'ENTREMONT

*

*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC

*PACKAGE (MAINDEC-11-DZQAC-C2), SEPT 14, 1976.

*

.SBTTL OPERATIONAL SWITCH SETTINGS

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SWITCH

USE

15

HALT ON ERROR

14

LOOP ON TEST

13

INHIBIT ERROR TYPEOUTS

11

INHIBIT ITERATIONS

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MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 8
DZRHBC.F11 OPERATIONAL SWITCH SETTINGS

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326      ;*          10      BELL ON ERROR
327      ;*          9      LOOP ON ERROR
328      ;*          8      LOOP ON TEST IN SWR(7:0)
329      .SBTTL  BASIC DEFINITIONS
330
331      ;*INITIAL ADDRESS OF THE STACK POINTER *** 750 ***
332      000750      STACK= 750
333      .EQUIV  EMT,ERROR      ;;BASIC DEFINITION OF ERROR CALL
334      .EQUIV  IOT,SCOPE      ;;BASIC DEFINITION OF SCOPE CALL
335
336      ;*MISCELLANEOUS DEFINITIONS
337      000011      HT= 11      ;;CODE FOR HORIZONTAL TAB
338      000012      LF= 12      ;;CODE FOR LINE FEED
339      000015      CR= 15      ;;CODE FOR CARRIAGE RETURN
340      000200      CRLF= 200    ;;CODE FOR CARRIAGE RETURN-LINE FEED
341      177776      PS= 177776  ;;PROCESSOR STATUS WORD
342      .EQUIV  PS,PSW
343      177774      STKLM= 177774 ;;STACK LIMIT REGISTER
344      177772      PIRQ= 177772 ;;PROGRAM INTERRUPT REQUEST REGISTER
345      177570      DSWR= 177570 ;;HARDWARE SWITCH REGISTER
346      177570      DDISP= 177570 ;;HARDWARE DISPLAY REGISTER
347
348      ;*GENERAL PURPOSE REGISTER DEFINITIONS
349      000000      R0= %0      ;;GENERAL REGISTER
350      000001      R1= %1      ;;GENERAL REGISTER
351      000002      R2= %2      ;;GENERAL REGISTER
352      000003      R3= %3      ;;GENERAL REGISTER
353      000004      R4= %4      ;;GENERAL REGISTER
354      000005      R5= %5      ;;GENERAL REGISTER
355      000006      R6= %6      ;;GENERAL REGISTER
356      000007      R7= %7      ;;GENERAL REGISTER
357      000006      SP= %6      ;;STACK POINTER
358      000007      PC= %7      ;;PROGRAM COUNTER
359
360      ;*PRIORITY LEVEL DEFINITIONS
361      000000      PR0= 0      ;;PRIORITY LEVEL 0
362      000040      PR1= 40     ;;PRIORITY LEVEL 1
363      000100      PR2= 100    ;;PRIORITY LEVEL 2
364      000140      PR3= 140    ;;PRIORITY LEVEL 3
365      000200      PR4= 200    ;;PRIORITY LEVEL 4
366      000240      PR5= 240    ;;PRIORITY LEVEL 5
367      000300      PR6= 300    ;;PRIORITY LEVEL 6
368      000340      PR7= 340    ;;PRIORITY LEVEL 7
369
370      ;*"SWITCH REGISTER" SWITCH DEFINITIONS
371      100000      SW15= 100000
372      040000      SW14= 40000
373      020000      SW13= 20000
374      010000      SW12= 10000
375      004000      SW11= 4000
376      002000      SW10= 2000
377      001000      SW09= 1000
378      000400      SW08= 400
379      000200      SW07= 200
380      000100      SW06= 100
381      000040      SW05= 40

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382 000020
383 000010
384 000004
385 000002
386 000001

SW04= 20
SW03= 10
SW02= 4
SW01= 2
SW00= 1
.EQUIV SW09, SW9
.EQUIV SW08, SW8
.EQUIV SW07, SW7
.EQUIV SW06, SW6
.EQUIV SW05, SW5
.EQUIV SW04, SW4
.EQUIV SW03, SW3
.EQUIV SW02, SW2
.EQUIV SW01, SW1
.EQUIV SW00, SW0

398 100000
399 040000
400 020000
401 010000
402 004000
403 002000
404 001000
405 000400
406 000200
407 000100
408 000040
409 000020
410 000010
411 000004
412 000002
413 000001

.*DATA BIT DEFINITIONS (BIT00 TO BIT15)

BIT15= 100000
BIT14= 40000
BIT13= 20000
BIT12= 10000
BIT11= 4000
BIT10= 2000
BIT09= 1000
BIT08= 400
BIT07= 200
BIT06= 100
BIT05= 40
BIT04= 20
BIT03= 10
BIT02= 4
BIT01= 2
BIT00= 1
.EQUIV BIT09, BIT9
.EQUIV BIT08, BIT8
.EQUIV BIT07, BIT7
.EQUIV BIT06, BIT6
.EQUIV BIT05, BIT5
.EQUIV BIT04, BIT4
.EQUIV BIT03, BIT3
.EQUIV BIT02, BIT2
.EQUIV BIT01, BIT1
.EQUIV BIT00, BIT0

426 000004
427 000010
428 000014
429 000014
430 000014
431 000014
432 000020
433 000024
434 000030
435 000034
436 000060
437 000064

.*BASIC "CPU" TRAP VECTOR ADDRESSES

ERRVEC= 4 :: TIME OUT AND OTHER ERRORS
RESVEC= 10 :: RESERVED AND ILLEGAL INSTRUCTIONS
TBITVEC= 14 :: "T" BIT
TRTVEC= 14 :: TRACE TRAP
BPTVEC= 14 :: BREAKPOINT TRAP (BPT)
IOTVEC= 20 :: INPUT/OUTPUT TRAP (IOT) **SCOPE**
PWRVEC= 24 :: POWER FAIL
EMTVEC= 30 :: EMULATOR TRAP (EMT) **ERROR**
TRAPVEC= 34 :: "TRAP" TRAP
TKVEC= 60 :: TTY KEYBOARD VECTOR
TPVEC= 64 :: TTY PRINTER VECTOR

J01

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 BASIC DEFINITIONS

MACY11 27(732) 01-OCT-76 09:03 PAGE 10

```

438      000240      PIRQVEC=240      ;;PROGRAM INTERRUPT REQUEST VECTOR
439      .SBTTL TRAP CATCHER
440
441      000000      .=0
442      ;*ALL UNUSED LOCATIONS FROM 4 - 776 CONTAIN A "+2,HALT"
443      ;*SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS
444      ;*LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS
445      000174      .=174
446      000174      000000      DISPREG: .WORD 0      ;;SOFTWARE DISPLAY REGISTER
447      000176      000000      SWREG: .WORD 0      ;;SOFTWARE SWITCH REGISTER
448
449      000200      000137      004176      .SBTTL STARTING ADDRESS(ES)
450      000204      000204      JMP @*BEGIN1      ;;JUMP TO STARTING ADDRESS OF PROGRAM
451      000204      000137      004144      .=204
452      000210      000210      JMP @*BEGIN
453      000210      000137      004152      .=210
454      000210      000137      004152      JMP @*BEGIN3
455      ;*****
456      .SBTTL MEMORY MANAGEMENT DEFINITIONS
457
458      ;*KT11 VECTOR ADDRESS
459      000250      MMVEC= 250
460
461      ;*KT11 STATUS REGISTER ADDRESSES
462
463      177572      SR0= 177572
464      177574      SR1= 177574
465      177576      SR2= 177576
466      172516      SR3= 172516
467
468      ;*KERNEL "I" PAGE DESCRIPTOR REGISTERS
469
470      172300      KIPDR0= 172300
471      172302      KIPDR1= 172302
472      172304      KIPDR2= 172304
473      172306      KIPDR3= 172306
474      172310      KIPDR4= 172310
475      172312      KIPDR5= 172312
476      172314      KIPDR6= 172314
477      172316      KIPDR7= 172316
478
479      ;*KERNEL "I" PAGE ADDRESS REGISTERS
480
481      172340      KIPAR0= 172340
482      172342      KIPAR1= 172342
483      172344      KIPAR2= 172344
484      172346      KIPAR3= 172346
485      172350      KIPAR4= 172350
486      172352      KIPAR5= 172352
487      172354      KIPAR6= 172354
488      172356      KIPAR7= 172356
489
490      ;*****
491      .SBTTL ACT11 HOOKS
492
493      ;*****

```


K01

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHC.P11 ACT11 HOOKS

MACY11 27(732) 01-OCT-76 09:03 PAGE 11

494
495 000214
496 000046
497 000046 046262
498 000052
499 000052 000000
500 000214

;HOOKS REQUIRED BY ACT11

\$SVPC=.

. =46

\$ENDAD

. =52

.WORD 0

.=\$SVPC

;SAVE PC

::1)SET LOC.46 TO ADDRESS OF \$ENDAD IN .SEOP

::2)SET LOC.52 TO ZERO

::RESTORE PC

.SBTTL COMMON TAGS

```

;*****
;THIS TABLE CONTAINS VARIOUS COMMON STORAGE LOCATIONS
;USED IN THE PROGRAM.

```

1100

SCMTAG:		
SPASS:	.WORD	0
STSTNM:	.BYTE	00
SERFLG:	.BYTE	00
SICNT:	.WORD	00
SLPADR:	.WORD	00
SLPERR:	.WORD	00
SERTTL:	.WORD	00
SITEMB:	.BYTE	00
SERMAX:	.BYTE	1
SERRPC:	.WORD	00
SGDADR:	.WORD	00
SBDADR:	.WORD	00
SGDDAT:	.WORD	00
SBDAT:	.WORD	00
	.WORD	00
	.WORD	00
AUTOB:	.BYTE	00
SINTAG:	.BYTE	00
	.WORD	0
SWR:	.WORD	DSWR
DISPLAY:	.WORD	DDISP
STKS:	177560	
STKB:	177562	
STPS:	177564	
STPB:	177566	
\$NULL:	.BYTE	0
\$FILLS:	.BYTE	2
\$FILLC:	.BYTE	12
STPFLG:	.BYTE	00
\$REGAD:	.WORD	0
\$REG0:	.WORD	0
\$REG1:	.WORD	00
\$REG2:	.WORD	00
\$REG3:	.WORD	00
\$REG4:	.WORD	00
\$REG5:	.WORD	00
\$TMP0:	.WORD	00
\$TMP1:	.WORD	00
\$TMP2:	.WORD	00
\$TMP3:	.WORD	00
\$TMP4:	.WORD	00
\$TMP5:	.WORD	0
\$TIMES:	0	
\$ESCAPE:	0	
\$BELL:	.ASCIZ	<207>
\$QUES:	.ASCII	??
\$SCRF:	.ASCII	<15>

```

1; START OF COMMON TAGS
2; CONTAINS PASS COUNT
3; CONTAINS THE TEST NUMBER
4; CONTAINS ERROR FLAG
5; CONTAINS SUGGESTED ITERATION COUNT
6; CONTAINS SCOPE LOOP ADDRESS
7; CONTAINS SCOPE RETURN FOR ERRORS
8; CONTAINS TOTAL ERRORS DETECTED
9; CONTAINS ITEM CONTROL BYTE
10; CONTAINS MAX. ERRORS PER TEST
11; CONTAINS PC OF LAST ERROR INSTRUCTION
12; CONTAINS ADDRESS OF 'GOOD' DATA
13; CONTAINS ADDRESS OF 'BAD' DATA
14; CONTAINS 'GOOD' DATA
15; CONTAINS 'BAD' DATA
16; RESERVED--NOT TO BE USED

17; AUTOMATIC MODE INDICATOR
18; INTERRUPT MODE INDICATOR

19; ADDRESS OF SWITCH REGISTER
20; ADDRESS OF DISPLAY REGISTER
21; TTY KBD STATUS
22; TTY KBD BUFFER
23; TTY PRINTER STATUS REG. ADDRESS
24; TTY PRINTER BUFFER REG. ADDRESS
25; CONTAINS NULL CHARACTER FOR FILLS
26; CONTAINS # OF FILLER CHARACTERS REQUIRED
27; INSERT FILL CHARS. AFTER A "LINE FEED"
28; "TERMINAL AVAILABLE" FLAG (BIT<07>=0=YES)
29; CONTAINS THE ADDRESS FROM
30; WHICH ($REG0) WAS OBTAINED
31; CONTAINS (($REGAD)+0)
32; CONTAINS (($REGAD)+2)
33; CONTAINS (($REGAD)+4)
34; CONTAINS (($REGAD)+6)
35; CONTAINS (($REGAD)+10)
36; CONTAINS (($REGAD)+12)
37; USER DEFINED
38; USER DEFINED
39; USER DEFINED
40; USER DEFINED
41; USER DEFINED
42; USER DEFINED
43; MAX. NUMBER OF ITERATIONS
44; ESCAPE ON ERROR ADDRESS
45; CODE FOR BELL
46; QUESTION MARK
47; CARRIAGE RETURN

```


MO1

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 COMMON TAGS

MACY11 27(732) 01-OCT-76 09:03 PAGE 13

557 001224 000012
558

SLF: .ASCIZ <12> ;;LINE FEED
;;*****

.SBTTL ERROR POINTER TABLE

;*THIS TABLE CONTAINS THE INFORMATION FOR EACH ERROR THAT CAN OCCUR.
 ;*THE INFORMATION IS OBTAINED BY USING THE INDEX NUMBER FOUND IN
 ;*LOCATION \$ITEMB. THIS NUMBER INDICATES WHICH ITEM IN THE TABLE IS PERTINENT.
 ;*NOTE1: IF \$ITEMB IS 0 THE ONLY PERTINENT DATA IS (\$ERRPC).
 ;*NOTE2: EACH ITEM IN THE TABLE CONTAINS 4 POINTERS EXPLAINED AS FOLLOWS:

;	*	EM	;;POINTS TO THE ERROR MESSAGE
;	*	DH	;;POINTS TO THE DATA HEADER
;	*	DT	;;POINTS TO THE DATA
;	*	DF	;;POINTS TO THE DATA FORMAT

\$ERRTB:

;ITEM 1

EM1

;CORRECT BIT DID NOT SET
 ;IN RH WORD COUNT REGISTER

DH1

DT1

DF1

;ITEM 2

EM2

;CORRECT BIT DID NOT SET
 ;IN BUS ADDRESS EXTENTION
 ;REGISTER

DH2

DT2

DF2

;ITEM 3

EM3

;CORRECT BIT DID NOT SET
 ;IN BUS ADDRESS REGISTER

DH3

DT3

DF3

;ITEM 4

EM4

;CORRECT BIT DID NOT SET
 ;IN RHOB REGISTER

DH4

DT4

DF4

;ITEM 5

EM5

;NED DID NOT SET IN
 ;RHCS2 REGISTER

DH5

DT5

DF5

;ITEM 6

EM6

;NEM LOGIC TO SET TRE
 ;AND SC BITS IN RHCS1
 ;IS NOT WORKING

DH5

DT5

DF5

;ITEM 7

EM7

;NEM BIT DOES NOT READ AS SET

559
 560
 561
 562
 563
 564
 565
 566
 567
 568
 569
 570
 571
 572
 573 001226
 574
 575
 576 001226 054760
 577
 578 001230 067522
 579 001232 071670
 580 001234 072234
 581
 582 001236 055020
 583
 584
 585 001240 067642
 586 001242 071702
 587 001244 072240
 588
 589 001246 055060
 590
 591 001250 067763
 592 001252 071714
 593 001254 072244
 594
 595 001256 055134
 596
 597 001260 070103
 598 001262 071726
 599 001264 072250
 600
 601 001266 055174
 602
 603 001270 070223
 604 001272 071740
 605 001274 072254
 606
 607 001276 055245
 608
 609
 610 001300 070223
 611 001302 071740
 612 001304 072254
 613
 614 001306 055461

615	001310	070223	DHS		
616	001312	071740	DT5		
617	001314	072254	DFS		
618			:ITEM 10		
619	001316	055527	EM10		:TRE BIT SET BUT NEM
620					:AND SC ARE NOT
621	001320	070223	DHS		
622	001322	071740	DT5		
623	001324	072254	DFS		
624			:ITEM 11		
625	001326	055563	EM11		:SC BIT SET BY ATTN OR MCPE
626					:ERROR OR SC IS SHORTED
627					:SHOULD HAVE BEEN SET BY NEM AND TRE
628	001330	070330	DH11		
629	001332	071752	DT11		
630	001334	072260	DF11		
631			:ITEM 12		
632	001336	055624	EM12		:TRE BIT SET BY NEM BUT SC
633					:DID NOT SET, LOGIC BETWEEN
634					:TRE AND SC NOT WORKING
635	001340	070223	DHS		
636	001342	071740	DT5		
637	001344	072254	DFS		
638					
639			:ITEM 13		
640	001346	055644	EM13		:TRE BIT IS SET BUT SC
641					:READS AS CLEARED. SC
642					:LOGIC ASSOCIATED WITH TRE
643					:BIT IS NOT WORKING OR SC
644					:HAS AN OPEN GOING TO THE BUS
645	001350	070223	DHS		
646	001352	071740	DT5		
647	001354	072254	DFS		
648					
649			:ITEM 14		
650	001356	055713	EM14		:WCE BIT DID NOT SET, BIT 14 IN
651					:RHCS2
652	001360	070223	DHS		
653	001362	071740	DT5		
654	001364	072254	DFS		
655					
656			:ITEM 15		
657	001366	055737	EM15		:WCE BIT DID NOT SET BUT
658					:TRE AND SC IN RHCS1 ARE
659					:SET.
660					
661	001370	070223	DHS		
662	001372	071740	DT5		
663	001374	072254	DFS		
664					
665			:ITEM 16		
666	001376	055763	EM16		:WCE AND SC ERROR BITS ARE
667					:SET TRE ERROR BIT SHOULD ALSO
668					:BE SET BUT IT READS AS CLEARED
669					:THERE MIGHT BE AN OPEN BETWEEN
670					

671				:TRE AND THE BUS
672	001400	070223	DHS	
673	001402	071740	DTS	
674	001404	072254	DFS	
675			17	
676	001406	056003	EM17	:WCE AND TRE ARE SET BUT
677				:SC BIT READS AS CLEARED
678				:LOGIC BETWEEN TRE AND SC
679				:DOES NOT SEEM TO BE WORKING
680				:BUT IT WORKED OK ON THE
681				:NON-EXISTENT MEMORY TEST
682				:WHICH PRECEDED THIS TEST
683				
684	001410	070223	DHS	
685	001412	071740	DTS	
686	001414	072254	DFS	
687				
688				
689				
690	001416	056052	20	:UPE DID NOT SET IN RHCS2
691			EM20	
692	001420	070223	DHS	
693	001422	071740	DTS	
694	001424	072254	DFS	
695				
696				
697	001426	056103	21	:TRE AND SC BITS ARE SET
698			EM21	:EITHER UPE HAS AN OPEN GOING
699				:TO BUS OR TRE AND SC WAS
700				:SET BY ANOTHER ERROR
701				
702	001430	070223	DHS	
703	001432	071740	DTS	
704	001434	072254	DFS	
705				
706				
707	001436	056132	22	:TRE BIT IS SET. UPE AND SC
708			EM22	:SHOULD ALSO BE SET BUT THEY
709				:READ AS CLEARED
710				
711	001440	070223	DHS	
712	001442	071740	DTS	
713	001444	072254	DFS	
714				
715				
716	001446	056165	23	:UPE AND TRE ARE SET BUT
717			EM23	:SC DID NOT SET. LOGIC TO
718				:SET SC DOES NOT SEEM TO
719				:BE WORKING
720				
721	001450	070223	DHS	
722	001452	071740	DTS	
723	001454	072254	DFS	
724				
725				
726	001456	056204	24	:NED DID NOT SET IN RHCS2
			EM24	

727					
728	001460	070223		DH5	
729	001462	071740		DT5	
730	001464	072254		DF5	
731					
732			: ITEM	25	
733	001466	056235		EM25	: TRE AND SC ARE SET
734					: BUT THEY SHOULD HAVE BEEN
735					: SET BY NED WHICH READS
736					: AS CLEARED
737					
738	001470	070223		DH5	
739	001472	071740		DT5	
740	001474	072254		DF5	
741					
742			: ITEM	26	
743	001476	056267		EM26	: TRE BIT SET BUT NED
744					: AND SC BITS READ AS
745					: CLEARED. NED SHOULD
746					: HAVE SET CAUSING TRE
747					: TO SET WHICH IN TURN
748					: SET SC. LOGIC NOT WORK
749					: ING CORRECTLY
750					
751	001500	070223		DH5	
752	001502	071740		DT5	
753	001504	072254		DF5	
754					
755			: ITEM	27	
756	001506	056315		EM27	: TRE BIT WAS NOT SET
757					: BY NED. TRE SET LOGIC
758	001510	070223		DH5	: NOT WORKING
759	001512	071740		DT5	
760	001514	072254		DF5	
761					
762			: ITEM	30	
763	001516	056350		EM30	: MXF BIT DID NOT SET
764					: IN RHCS2
765					
766	001520	070223		DH5	
767	001522	071740		DT5	
768	001524	072254		DF5	
769					
770			: ITEM	31	
771	001526	056405		EM31	: MXF BIT SHOULD BE SET
772					: IN RHCS2 BUT IT READS AS
773					: CLEARED. TRE AND SC ARE SET
774					: IN RHCS1.
775					
776	001530	070223		DH5	
777	001532	071740		DT5	
778	001534	072254		DF5	
779					
780			: ITEM	32	
781	001536	056444		EM32	: TRE BIT IS SET BUT MXF
782					: AND SC READ AS CLEARED

E02

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRMBC.P11 ERROR POINTER TABLE

MACY11 27(732) 01-OCT-76 09:03 PAGE 18

783				:MXF AND SC BITS ARE INCORRECT
784	001540	070223	DH5	
785	001542	071740	DT5	
786	001544	072254	DF5	
787				
788			:ITEM 33	
789	001546	056473	EM33	:TRE LOGIC ASSOCIATED WITH
790				:MXF IS NOT WORKING
791				:TRE READS AS CLEARED
792				:OR TRE HAS AN OPEN GOING
793				:TO THE BUS
794				
795	001550	070223	DH5	
796	001552	071740	DT5	
797	001554	072254	DF5	
798				
799			:ITEM 34	
800	001556	056543	EM34	:TESTER IS NOT CONNECT
801				:TO THE MASSBUS DEVICE
802				:CODE SHOULD BE A 40
803	001560	070416	DH34	:PC TEST NO. DEVICE CODE
804				
805	001562	071762	DT34	:SERRPC,\$TSTNM,DT,0
806				
807	001564	072263	DF34	:0,0,0
808				
809			:ITEM 35	
810	001566	056613	EM35	:BIT IN RHCS3 WILL NOT ET
811				
812				
813	001570	071551	DH171	
814	001572	072212	DT171	
815	001574	072260	DF11	
816				
817			:ITEM 36	
818	001576	056645	EM36	
819				
820	001600	070476	DH36	:PC TEST NO. FAILING ADDRESS
821				
822	001602	071776	DT36	:SERRPC,\$TSTNM,RHCS1,0
823				
824	001604	072267	DF36	:0,0,0
825				
826			:ITEM 37	
827	001606	056703	EM37	:DLT DID NOT SET IN RHCS2
828				
829	001610	070473	DH35	
830				
831	001612	071772	DT35	
832				
833	001614	072266	DF35	
834				
835			:ITEM 40	
836	001616	056734	EM40	:DLT IS NOT SET IN RHCS2 BUT
837				:TRE AND SC READ AS SET.TRE
838				:AND SC MUST HAVE BEEN SET BY A DIFFERENT ERROR

839				
840	001620	070473	DH35	
841	001622	071772	DT35	
842	001624	072266	DF35	
843				
844			; ITEM	41
845	001626	057074	EM41	: OUTPUT READY IN RHCS2
846				: DID NOT SET
847				
848	001630	070557	DH41	: PC TEST NO.
849				
850	001632	072006	DT41	: SERRPC, STSTNM, 0
851				
852	001634	072272	DF41	:
853				
854			; ITEM	42
855				
856	001636	057177	EM42	: ALL BITS DID NOT LOAD INTO RHWC
857				: (177777)
858				
859	001640	000000	0	
860	001642	000000	0	
861	001644	000000	0	
862				
863			; ITEM	43
864	001646	057250	EM43	: RHWC DID NOT LOAD ANY BITS (177777)
865	001650	000000	0	
866	001652	000000	0	
867	001654	000000	0	
868				
869			; ITEM	44
870	001656	057314	EM44	: RHWC
871				: SOME BITS CLEARED AFTER CLEAR
872				: WAS LOADED INTO RHCS2
873	001660	000000	0	
874	001662	000000	0	
875	001664	000000	0	
876				
877			; ITEM	45
878	001666	057406	EM45	: NON-EXISTANT MEMORY BIT
879				: SET IN RHCS2
880	001670	000000	0	
881	001672	000000	0	
882	001674	000000	0	
883				
884			; ITEM	46
885	001676	057461	EM46	: RHBA DID NOT CLEAR AFTER CLR
886				: WAS LOADED INTO RHCS2
887	001700	000000	0	
888	001702	000000	0	
889	001704	000000	0	
890				
891			; ITEM	47
892	001706	057542	EM47	: ALL BITS DID NOT LOAD INTO
893				: RHBA REGISTER (177776)
894	001710	000000	0	

895	001712	000000	0	
896	001714	000000	0	
897				
898			:ITEM	50
899	001716	057613	EM50	:LOADING TRE AFER ITS SET DOES NOT
900				:CLEAR ERRORS
901	001720	000000	0	
902	001722	000000	0	
903	001724	000000	0	
904				
905			:ITEM	51
906	001726	057672	EM51	:PGE DID NOT SET IN RHCS2
907	001730	000000	0	
908	001732	000000	0	
909	001734	000000	0	
910				
911			:ITEM	52
912	001736	057723	EM52	:THE PROM WHILE ACCESSING A
913				:REGISTER WHICH YOUR TESTER
914				:CANNOT SUPPLY INFORMATION FOR
915				:SAYS INFORMATION IS PRESENT
916				
917	001740	070603	DM52	:PC TEST NO. ADDRESS CONT
918				
919	001742	072014	DT52	:SERRPC,STSTNM,BAE,SREGO
920				
921	001744	072274	DF52	:
922				
923			:ITEM	53
924	001746	060076	EM53	:RHCS1
925	001750	000000	0	
926	001752	000000	0	
927	001754	000000	0	
928				
929			:ITEM	54
930	001756	060104	EM54	:RHWC
931	001760	000000	0	
932	001762	000000	0	
933	001764	000000	0	
934				
935			:ITEM	55
936	001766	060111	EM55	:RHBA
937	001770	000000	0	
938	001772	000000	0	
939	001774	000000	0	
940				
941			:ITEM	56
942	001776	060116	EM56	:RHMR2
943	002000	000000	0	
944	002002	000000	0	
945	002004	000000	0	
946				
947			:ITEM	57
948	002006	060124	EM57	:RHCS2
949	002010	000000	0	
950	002012	000000	0	

H02

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHC.P11 ERROR POINTER TABLE

MACY11 27(732) 01-OCT-76 09:03 PAGE 21

951	002014	000000	0	
952				
953			; ITEM	60
954	002016	060132	EM60	; RHST
955	002020	000000	0	
956	002022	000000	0	
957	002024	000000	0	
958				
959			; ITEM	61
960	002026	060137	EM61	; RHER
961	002030	000000	0	
962	002032	000000	0	
963	002034	000000	0	
964				
965			; ITEM	62
966	002036	060144	EM62	; RHAS
967	002040	000000	0	
968	002042	000000	0	
969	002044	000000	0	
970				
971			; ITEM	63
972	002046	060151	EM63	; RHTDB
973	002050	000000	0	
974	002052	000000	0	
975	002054	000000	0	
976				
977			; ITEM	64
978	002056	060157	EM64	; RHOB
979	002060	000000	0	
980	002062	000000	0	
981	002064	000000	0	
982				
983			; ITEM	65
984	002066	060164	EM65	; RHMR1
985	002070	000000	0	
986	002072	000000	0	
987	002074	000000	0	
988				
989			; ITEM	66
990	002076	060172	EM66	; RHDT
991	002100	000000	0	
992	002102	000000	0	
993	002104	000000	0	
994				
995			; ITEM	67
996	002106	060177	EM67	; RHBAE
997	002110	000000	0	
998	002112	000000	0	
999	002114	000000	0	
1000				
1001			; ITEM	70
1002	002116	060205	EM70	; RHCS3
1003	002120	000000	0	
1004	002122	000000	0	
1005	002124	000000	0	
1006				

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 ERROR POINTER TABLE

MACY11 27(732) 01-OCT-76 09:03 PAGE 22

1007				
1008	002126	060213	; ITEM 71	
1009			EM71	; DEVICE NO DOES NOT EQUAL
1010				; A 7 IN RHMR2 AFTER A CLEAR
1011	002130	071577		
1012			DH172	
1013	002132	072222		
1014			DT172	
1015	002134	072326		
1016			DF172	
1017				
1018	002136	060302	; ITEM 72	
1019			EM72	; RHCS1 HAS AN ERROR BIT
1020				; SET AFTER CLEAR OPERATION
1021	002140	070761		
1022			DH72	; PC TEST NO. CONTENTS OF REGISTER
1023	002142	072030		
1024			DT71	
1025	002144	072301		
1026			DF71	
1027				
1028	002146	060337	; ITEM 73	
1029			EM73	; ERROR BIT SET IN RHCS2
1030				; AFTER A CLEAR OPERATION
1031	002150	070761		
1032			DH72	
1033	002152	072030		
1034	002154	072301	DT71	
1035			DF71	
1036				
1037	002156	060366	; ITEM 74	
1038			EM74	; ERROR BIT SET IN RHER,
1039				; TESTER ERROR REGISTER, AFTER
1040	002160	070761		; A CLEAR OPERATION
1041	002162	072030		
1042	002164	072301	DH72	
1043			DT71	
1044			DF71	
1045	002166	060414	; ITEM 75	
1046			EM75	; ERROR BIT SET IN RHST
1047				; AFTER A CLEAR OPERATION
1048	002170	070761		
1049	002172	072030	DH72	
1050	002174	072301	DT71	
1051			DF71	
1052	002176	060444	; ITEM 76	
1053			EM76	; RHBA INCREMENTED BUT DID NOT CARRY
1054	002200	071050		; OVER TO THE RHBAE REGISTER
1055	002202	072040		
1056	002204	072304	DH76	
1057			DT76	
1058	002206	060551	DF76	
1059			; ITEM 77	
1060	002210	067522	EM77	; READY DID NOT SET AND RHWC
1061	002212	071670		; DID NOT INCREMENTH DOING A WRITE OPERATION
1062	002214	072234	DH1	
			DT1	
			DF1	

1063			; ITEM	100	
1064	002216	060663		EM100	; RHBA DID NOT CLEAR AFTER CLR
1065					; WAS LOADED INTO RHCS2
1066	002220	067642		DH2	
1067	002222	071702		DT2	
1068	002224	072240		DF2	
1069			; ITEM	101	
1070	002226	060750		EM101	
1071	002230	067642		DH2	
1072	002232	071702		DT2	
1073	002234	072240		DF2	
1074			; ITEM	102	
1075	002236	061015		EM102	; READY DID NOT SET IN RHCS1
1076	002240	000000		0	
1077	002242	000000		0	
1078	002244	000000		0	
1079			; ITEM	103	
1080	002246	061046		EM103	; DOING A WRITE OPERATION RDY
1081					; DID NOT SET AND WC DID NOT INCREMENT
1082					; BUT INFO WAS WRITTEN TO TESTER
1083	002250	067522		DH1	
1084	002252	071670		DT1	
1085	002254	072234		DF1	
1086			; ITEM	104	
1087	002256	061224		EM104	; DOING A WRITE OPERATION RDY
1088					; DID NOT SET AND WC WAS NOT INCREMENTED
1089					; AND INFO WAS NOT WRITTEN TO TESTER
1090					; (WRITE OPERATION DID NOT WORK)
1091	002260	000000		0	
1092	002262	000000		0	
1093	002264	000000		0	
1094			; ITEM	105	
1095	002266	061415		EM105	; RHBAE IS MESSED UP IT SHOULD
1096					; EQUAL 40, IT DOES NOT = 37(OLD)
1097					; AND IT DOES NOT = 0
1098	002270	071106		DH105	
1099	002272	072052		DT105	
1100	002274	072310		DF105	
1101			; ITEM	106	
1102	002276	061462		EM106	; RHBAE DID NOT GET INCREMENTED
1103	002300	071106		DH105	
1104	002302	072052		DT105	
1105	002304	072310		DF105	
1106			; ITEM	107	
1107	002306	061510		EM107	; READ REV. OPERATIONS DID NOT
1108	002310	000000		0	; READ FROM TESTER TO STORAGE LOCATION
1109	002312	000000		0	; (RBUS)
1110	002314	000000		0	
1111			; ITEM	110	
1112	002316	061617		EM110	; RHBAE = 0 IT SHOULD = 40
1113					; AFTER A ONE WORD WRITE
1114	002320	000000		0	
1115	002322	000000		0	
1116	002324	000000		0	
1117			; ITEM	111	
1118	002326	061711		EM111	; A17 DID NOT SET AFTER BA WAS INCREMENTED

K02

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 ERROR POINTER TABLE

MACY11 27(732) 01-OCT-76 09:03 PAGE 24

1119	002330	071153	DH111	
1120	002332	072066	DT111	
1121	002334	072310	DF105	
1122			112	
1123	002336	061764	EM112	;BA DID NOT INCREMENT
1124	002340	071153	DH111	
1125	002342	072066	DT111	
1126	002344	072310	DF105	
1127			113	
1128	002346	062011	EM113	;RHBA INCREMENTED BUT IT DID ;NOT CARRY TO A16 + A17 IN RHCS1
1129				
1130	002350	071153	DH111	
1131	002352	072066	DT111	
1132	002354	072310	DF105	
1133			114	
1134	002356	062106	EM114	;OUTPUT READY WAS NOT NEGATED ;AFTER CLR WAS LOADED INTO RHCS2
1135				
1136	002360	000000	0	
1137	002362	000000	0	
1138	002364	000000	0	
1139			115	
1140	002366	062204	EM115	;ALL BITS DID NOT READ TO STORAGE ;LOCATION (RBUF) DURING A READ REV. OPERATION
1141	002370	000000	0	
1142	002372	000000	0	
1143	002374	000000	0	
1144			116	
1145	002376	062316	EM116	;MDPE DID NOT SET IN RHCS2
1146	002400	000000	0	
1147	002402	000000	0	
1148	002404	000000	0	
1149			117	
1150	002406	062350	EM117	;INFO DID NOT WITE TO TESTER ;DOING A WRITE REV. OPERATION
1151				
1152	002410	071465	DH147	
1153	002412	072170	DT147	
1154	002414	072304	DF76	
1155			120	
1156	002416	062446	EM120	;TRE AND SC DO NOT SEEM TO HAVE ;BEEN SET BY MDPE
1157				
1158	002420	070330	DH11	
1159	002422	071752	DT11	
1160	002424	072260	DF11	
1161			121	
1162	002426	062507	EM121	;TRE IS ONLY BIT SET MDPE AND ;SC SHOULD ALSO BE SET
1163				
1164	002430	071220	DH121	
1165	002432	072102	DT121	
1166	002434	072304	DF76	
1167			122	
1168	002436	062572	EM122	;SC NOT SET AFTER MDPE AND TRE SET
1169	002440	071220	DH121	
1170	002442	072102	DT121	
1171	002444	072304	DF76	
1172			123	
1173	002446	062624	EM123	;TRE AND SC WERE SET EITHER BY ;AN ERROR OTHER THAN PGE,OR PGE
1174				

Address	Offset	Value	Comment
1175	002450	000000	
1176	002452	000000	
1177	002454	000000	
1178			
1179			
1180	002456	062677	
1181			
1182	002460	000000	
1183	002462	000000	
1184	002464	000000	
1185			
1186	002466	062772	
1187			
1188	002470	000000	
1189	002472	000000	
1190	002474	000000	
1191			
1192	002476	063066	
1193			
1194	002500	000000	
1195	002502	000000	
1196	002504	000000	
1197			
1198	002506	063157	
1199			
1200	002510	000000	
1201	002512	000000	
1202	002514	000000	
1203			
1204	002516	063255	
1205	002520	071256	
1206	002522	072114	
1207	002524	072267	
1208			
1209	002526	063327	
1210	002530	071256	
1211	002532	072114	
1212	002534	070476	
1213			
1214	002536	063361	
1215	002540	071304	
1216	002542	072124	
1217	002544	072315	
1218			
1219	002546	063415	
1220			
1221	002550	071304	
1222	002552	072124	
1223	002554	072315	
1224			
1225	002556	063516	
1226			
1227	002560	071304	
1228	002562	072124	
1229	002564	072315	
1230			

M02

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRMBC.P11 ERROR POINTER TABLE

MACY11 27(732) 01-OCT-76 09:03 PAGE 26

1231	002566	063577	EM135	;WCE HI DID NOT SET IN RHCS3
1232	002570	071304	DH132	
1233	002572	072124	DT132	
1234	002574	072315	DF132	
1235			136	
1236	002576	063633	EM136	;WCE HI SET BUT WCE DID NOT SET IN RHCS2
1237	002600	071304	DH132	
1238	002602	072124	DT132	
1239	002604	072315	DF132	
1240			137	
1241	002606	063714	EM137	;WCE LO SET WITH WCE HI IN RHCS3
1242	002610	071304	DH132	
1243	002612	072124	DT132	
1244	002614	072315	DF132	
1245			140	

1246	002616	064015	EM140	;WRITE OPERATION DID NOT INC WC
1247	002620	000000	0	
1248	002622	000000	0	
1249	002624	000000	0	
1250			;ITEM 141	
1251	072626	064072	EM141	;BA WAS NOT INC AFTER A WRITE
1252	002630	000000	0	
1253	002632	000000	0	
1254	002634	000000	0	
1255			;ITEM 142	
1256	002636	064146	EM142	;INFO WAS NOT WRITTEN TO TESTER
1257	002640	071362	DH142	
1258	002642	072142	DT142	
1259	002644	072304	DF76	
1260			;ITEM 143	
1261	002646	064220	EM143	;READ OPERATION DID NOT INC WC
1262	002650	000000	0	
1263	002652	000000	0	
1264	002654	000000	0	
1265			;ITEM 144	
1266	002656	064274	EM144	;BA WAS NOT INC AFTER A READ
1267	002660	000000	0	
1268	002662	000000	0	
1269	002664	000000	0	
1270			;ITEM 145	
1271	002666	064362	EM145	;INFO DID NOT READ FROM TESTER
1272	002670	071362	DH142	
1273	002672	072142	DT142	
1274	002674	072304	DF76	
1275			;ITEM 146	
1276	002676	064427	EM146	;THIS IS FOR PRINTED CONTENTS ;OF THE RH REGISTERS
1277				
1278	002700	071420	DH146	
1279	002702	072154	DT146	
1280	002704	072310	DF105	
1281			;ITEM 147	
1282	002706	064500	EM147	;ALL BITS DID NOT GET TRANSFERED ;DURING A READ OPERATION
1283				
1284	002710	071465	DH147	
1285	002712	072170	DT147	
1286	002714	072304	DF76	
1287			;ITEM 150	
1288	002716	064571	EM150	;READ OPERATION DID NOT SEEM TO WORK
1289	002720	071465	DH147	
1290	002722	072170	DT147	
1291	002724	072304	DF76	
1292			;ITEM 151	
1293	002726	064723	EM151	;ALL BITS DID NOT WRITE TO TESTER
1294	002730	071465	DH147	
1295	002732	072170	DT147	
1296	002734	072304	DF76	
1297			;ITEM 152	
1298	002736	065025	EM152	;WRITE OPERATION DID NOT WRITE ;TO TESTER
1299				
1300	002740	071465	DH147	
1301	002742	072170	DT147	

1302	002744	072304			
1303			:ITEM	DF76 153 EM153	:DBL SET ON A 2 WORD TRANSFER :WITH BAI SET
1304	002746	065075			
1305				0	
1306	002750	000000		0	
1307	002752	000000		0	
1308	002754	000000		0	
1309			:ITEM	154 EM154	:DBL SET ON A 1 WORD READ FROM :AN EVEN ADDRESS
1310	002756	065161			
1311				0	
1312	002760	000000		0	
1313	002762	000000		0	
1314	002764	000000		0	
1315			:ITEM	155 EM155	:DBL SET ON A 2 WORD WRITE REV :WITH BAI SET
1316	002766	065252			
1317				0	
1318	002770	000000		0	
1319	002772	000000		0	
1320	002774	000000		0	
1321			:ITEM	156 EM156	:DBL SET ON A 2 WORD WRITE FROM :FROM AN ODD ADDRESS
1322	002776	065340			
1323				0	
1324	003000	000000		0	
1325	003002	000000		0	
1326	003004	000000		0	
1327			:ITEM	157 EM157	:DBL DID NOT SET ON A 2 WORD :WRITE REV FROM AN EVEN ADDRESS
1328	003006	065431			
1329				0	
1330	003010	000000		0	
1331	003012	000000		0	
1332	003014	000000		0	
1333			:ITEM	160 EM160	:DBL SET ON A 2 WORD WRITE REV :FROM AN ODD ADDRESS
1334	003016	065525			
1335				0	
1336	003020	000000		0	
1337	003022	000000		0	
1338	003024	000000		0	
1339			:ITEM	161 EM161	:DBL SET ON A 3 WORD WRITE REV :FROM AN ODD ADDRESS
1340	003026	065614			
1341				0	
1342	003030	000000		0	
1343	003032	000000		0	
1344	003034	000000		0	
1345			:ITEM	162 EM162	:DBL DID NOT SET ON A 2 WORD
1346	003036	065703			
1347	003040	000000		0	
1348	003042	000000		0	
1349	003044	000000		0	
1350			:ITEM	163 EM163	:DBL SET ON A 2 WORD READ :FROM AN ODD ADDRESS
1351	003046	065772			
1352				0	
1353	003050	000000		0	
1354	003052	000000		0	
1355	003054	000000		0	
1356			:ITEM	164 EM164	:DBL SET ON A 2 WORD READ REV
1357	003056	066050			

Address	Word	Value	Comment
1358			;FROM AN ODD ADDRESS
1359	003060	000000	
1360	003062	000000	
1361	003064	000000	
1362			
1363	003066	066137	:ITEM 165 EM165
1364			;DBL DID NOT SET ON A 2 WORD ;READ REV FROM AN EVEN ADDRESS
1365	003070	000000	
1366	003072	000000	
1367	003074	000000	
1368			
1369	003076	066235	:ITEM 166 EM166
1370			;DBL SET ON A 3 WORD READ FROM ;AN EVEN ADDRESS
1371	003100	000000	
1372	003102	000000	
1373	003104	000000	
1374			
1375	003106	066314	:ITEM 167 EM167
1376			;DBL DID NOT SET ON A 3 WORD ;READ REV FROM AN EVEN ADDRESS
1377	003110	000000	
1378	003112	000000	
1379	003114	000000	
1380			
1381	003116	000000	:ITEM 170
1382	003120	071523	0 DH170
1383	003122	072202	DT170
1384	003124	072323	DF170
1385			
1386	003126	066413	:ITEM 171 EM171
1387			;TRE READS AS SET,PGE AND SC ;READ AS CLEARED,PGE AND SC ;SHOULD ALSO BE SET
1388			
1389	003130	000000	
1390	003132	000000	
1391	003134	000000	
1392			
1393	003136	066465	:ITEM 172 EM172
1394			;PGE AND TRE READ AS SET SC ;READS AS CLEARED
1395	003140	000000	
1396	003142	000000	
1397	003144	000000	
1398			
1399	003146	066506	:ITEM 173 EM173
1400			;READY DID NOT CAUSE AN INTRUPT ;WITH IE SET IN RHCS1
1401	003150	000000	
1402	003152	000000	
1403	003154	000000	
1404			
1405	003156	066572	:ITEM 174 EM174
1406	003160	000000	
1407	003162	000000	
1408	003164	000000	
1409			
1410	003166	066623	:ITEM 175 EM175
1411	003170	000000	
1412	003172	000000	
1413	003174	000000	

D03

MASSBUS RHTD AND RH11 DIAGNOSTIC
DZRHBC.F11 ERROR POINTER TABLE

MACY11 27(732) 01-OCT-76 09:03 PAGE 30

1414			:ITEM	176	
1415	003176	066663		EM176	;TRE IS SET DLT AND SC SHOULD ALSO BE SET
1416	003200	071220		DH121	
1417	003202	072102		DT121	
1418	003204	072304		DF76	
1419			:ITEM	177	
1420	003206	066716		EM177	;DLT AND TRE ARE SET ,SC READS AS CLEARED
1421	003210	071220		DH121	
1422	003212	072102		DT121	
1423	003214	072304		DF76	
1424			:ITEM	200	
1425	003216	066763		EM200	;HIBITE LOBYTE GATE FOR WC NG
1426	003220	070557		DH41	
1427	003222	072006		DT41	
1428	003224	072272		DF41	
1429			:ITEM	201	
1430	003226	067045		EM201	;HIBYTE LOBYTE GATE FOR DB NG
1431	003230	070557		DH41	
1432	003232	072006		DT41	
1433	003234	072272		DF41	
1434			:ITEM	202	
1435	003236	067127		EM202	;HIBYTE LOBYTE GATE FOR BA IS NG
1436	003240	070557		DH41	
1437	003242	072006		DT41	
1438	003244	072272		DF41	
1439			:ITEM	203	
1440	003246	067211		EM203	;RHBA HAS WRONG ADDRESS
1441	003250	070557		DH41	
1442	003252	072006		DT41	
1443	003254	072272		DF41	
1444			:ITEM	204	
1445	003256	067271		EM204	;TESTER DATA BUFFER HAS WRONG INFO"
1446	003260	070557		DH41	
1447	003262	072006		DT41	
1448	003264	072272		DF41	
1449			:ITEM	205	
1450	003266	067356		EM205	;RH DID NOT INTERRUPT
1451	003270	070557		DH41	
1452	003272	072006		DT41	
1453	003274	072272		DF41	
1454			:ITEM	206	
1455	003276	067442		EM206	;RHWG SHOULD BE ZERO
1456	003300	070557		DH41	
1457	003302	072006		DT41	
1458	003304	072272		DF41	
1459			:ITEM	207	
1460	003306	067466		EM207	;TRANSFER WAS DONE ON PORT B
1461	003310	000000		0	
1462	003312	000000		0	
1463	003314	000000		0	
1464			:RH REGISTERS		
1465					
1466					
1467					
1468	003316	000774	RHVEC:774		;RH VECTOR ADDRESS
1469			;;	*****	

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1471
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;WORD COUNT REGISTER (RHWC)
;EACH BIT IS CALLED BY BIT NUMBER

;BUS ADDRESS REGISTER (RHBA)
;EACH BIT IS CALLED BY BIT NUMBER

;CONTROL AND STATUS REGISTER 2 (RHCS2)

000001	US1=	1	;UNIT SELECT (BIT #0)
000002	US2=	2	;UNIT SELECT (BIT #1)
000004	US4=	4	;UNIT SELECT (BIT #2)
000010	BAT=	10	;BUS ADDRESS INCREMENT INHIBIT (BIT #3)
000020	PAT=	20	;INVERT PARITY CHECK FOR MCPE
000040	CLR=	40	;CLEAR (BIT #5)
000100	IR=	100	;INPUT READY (BIT #6)
000200	OR=	200	;OUTPUT READY (BIT #7)
000400	MPE=	400	;MASS BUS PARITY ERROR (BIT #8)
001000	MXF=	1000	;MISSED TRANSFER ERROR (BIT #9)
002000	PGE=	2000	;PROGRAM ERROR (BIT #10)
004000	NEM=	4000	;NON EXISTANT MEMORY (BIT #11)
010000	NED=	10000	;NON EXISTANT DRIVE (BIT #12)
020000	UPE=	20000	;UNIBUS PARITY ERROR (BIT #13)
040000	WCE=	40000	;WRITE CHECK ERROR (BIT #14)
100000	DLT=	100000	;DATA LATE (BIT #15)

;CONTROL AND STATUS REGISTER 3 (RHCS3)

000001	IPCK0=	1	;INVERT PARITY, ON LOW BYTE OF EVEN WORD (BIT #0)
000002	IPCK1=	2	;INVERT PARITY, ON HI BYTE OF EVEN WORD (BIT #1)
000004	IPCK2=	4	;INVERT PARITY, ON LOW BYTE OF ODD WORD (BIT #2)
000010	IPCK3=	10	;INVERT PARITY, ON HI BYTE OF ODD WORD (BIT #3)
000100	IE3=	100	;INTERUPT ENABLE SAME AS BIT 6 OF RHCS1 (BIT #6)
002000	DBL=	2000	;DOUBLE WORD OPERATION, SET WHEN LAST MEMORY TRANSFER WAS
004000	WCELO=	4000	;WRITE CHECK ERROR EVEN WORD (BIT #11)
010000	WCEHI=	10000	;WRITE CHECK ERROR ODD WORD (BIT #12)
020000	DPELO=	20000	;DATA PARITY ERROR EVEN WORD (BIT #13)
040000	DPEHI=	40000	;DATA PARITY ERROR ODD WORD (BIT #14)
100000	APE=	100000	;ADDRESS PARITY ERROR (BIT #15)

;DATA BUFFER REGISTER (RHDB)
;EACH BIT IS CALLED BY BIT NUMBER

;CONTROL AND STATUS 1 REGISTER. (#00)

000001	GO=	1	;GO (BIT #0)
000100	IE=	100	;INTERRUPT ENABLE (BIT #6)
000200	RDY=	200	;READY (BIT #7)
000400	A16=	400	;HIGH ORDER UNIBUS BITS (BIT #8)
001000	A17=	1000	;HIGH ORDER UNIBUS BITS (BIT #9)

1526	002000	PSEL=	2000	:PORT SELECT (BIT #10)
1527	004000	DVA=	4000	:DEVICE AVAILABLE (BIT #11)
1528	020000	MCPE=	20000	:MASSBUSS PARITY ERROR (BIT #13)
1529	040000	TRE=	40000	:TRANSFER ERROR (BIT #14)
1530	000100	TREB=	100	:TRE BIT FOR A BYTE OPERATION
1531	100000	SC=	100000	:SPECIAL CONDITION (BIT #15)
1532				
1533		:STATUS REGISTER (RHST) (#01)		
1534				
1535	000200	DRY=	200	:DRIVE READY (BIT #7)
1536	000400	DPR=	400	:DRIVE PRESENT (BIT #8)
1537	010000	MOL=	10000	:MEDIUM ON-LINE (BIT #12)
1538	020000	PIP=	20000	:POSITIONING OPERATION IN PROGRESS (BIT #13)
1539	040000	ERR=	40000	:COMPOSIT ERROR. (BIT #14)
1540	100000	ATA=	100000	:ATTENTION ACTIVE (BIT #15)
1541				
1542		:ERROR REGISTER #01 (RHER) (#02)		
1543	000001	ILF=	1	:ILLEGAL FUNCTION (BIT #0)
1544	000004	RMR=	4	:REGISTER MODIFICATION REFUSED (BIT #2)
1545	000010	CPE=	10	:CONTROL PARITY ERROR (BIT #3)
1546	000020	DPE=	20	:DATA PARITY ERROR (BIT #4)
1547	000040	RMBEX=	40	:MASSBUS EXCEPTION WHEN SET CAUSES AN ABORT OF A DATA T
1548	000100	RFAIL=	100	:MASSBUS POWER FAIL (BIT #6)
1549	010000	DTE=	10000	:DRIVE TIMING ERROR (BIT #12)
1550	020000	OPI=	20000	:OPERATION INCOMPLETE (BIT #13)
1551				

;DIAGNOSTIC REGISTER (RHMR1) (#03)

1552		DMD=	1	;DIAGINOSTIC MODE (BIT #0)
1553		MCLK=	2	;MAINTAINCE CLOCK (BIT #1)
1554	000001	FERR=	4	;FORCE ERROR (BIT #2)
1555	000002	ICPA=	10	;INVERT CONTROL PARITY, CAUSES PARITY TO BE EVEN WHEN SET
1556	000004	IDPA=	20	;INVERT DATA PARITY, CAUSES DATA PARITY TOBE EVEN WHEN SE
1557	000010	DPCA=	40	;DISABLE PARITY CHECK, INHIBITS PARITY CHECK ON BOTH C AN
1558	000020	NEBL=	100	;NO END OF BLOCK, INHIBITS TESTER FROM GENERATING END OF
1559	000040	DTRM=	200	;WHEN SET DELAYS TRA FROM BEING ASSERTED FOR 500NS (BIT
1560	000100	DOCC=	400	;DISSABLE OCCUPY (BIT #8)
1561	000200	SLKM=	1000	;SYNC CLOCK MINIMUM WIDTH, WHEN SET CHANGES SYNC CLOCK T
1562	000400	ISLK=	2000	;INVERT SYNC CLOCK, WHEN SET INVERTS SYNC CLOCK, NO EFFECT
1563	001000	ENPS=	4000	;ENABLE PATTERN SHIFT, WHEN SET CAUSES A 16 OR 18 BIT ROT
1564	002000	BMD18=	10000	;18 BIT MODE (BIT #12)
1565	004000			
1566	010000			

;ATTENTION SUMMARY PSEUDO-REGISTER (RHAS) (#04)

1567		AT0=	1	;DEVICE 0 (BIT #0)
1568		AT1=	2	;DEVICE 1 (BIT #1)
1569		AT2=	4	;DEVICE 2 (BIT #2)
1570	000001	AT3=	10	;DEVICE 3 (BIT #3)
1571	000002	AT4=	20	;DEVICE 4 (BIT #4)
1572	000004	AT5=	40	;DEVICE 5 (BIT #5)
1573	000010	AT6=	100	;DEVICE 6 (BIT #6)
1574	000020	AT7=	200	;DEVICE 7 (BIT #7)
1575	000040			
1576	000100			
1577	000200			

;TRANSFER CONTROL REGISTER (#5)

1578		DN0=	1	;DRIVE NUBER BIT #0 (BIT #0)
1579		DN1=	2	;DRIVE NUMBER BIT #1 (BIT #1)
1580		DN2=	4	;DRIVE NUMBER BIT #2 (BIT #2)
1581	000001	SCLK=	10	;SYNC CLOCK RANGE BIT, WHEN CLEAR SYNC CLOCK IS 0.4-2.6
1582	000002			;WHEN SET 2.0-10.6 MICRO SECONDS (BIT #3)
1583	000004	GAP=	20	;GAP SIZE BIT, SETS GAP SIZE TO 5 MICROSECONDS WHEN CLEAR
1584	000010	BL0=	40	;BLOCK SIZE BIT 0 (BIT #5)
1585		BL1=	100	;BLOCK SIZE BIT 1 (BIT #6)
1586	000020	BL2=	200	;BLOCK SIZE BIT 2 (BIT #7)
1587	000040			
1588	000100			
1589	000200			

;RH70 I/O REGISTERS LOCATED IN RH

1590		ADD1:	160100	;BASE ADDRESS RH #1
1591		ADD2:	160200	;BASE ADDRESS RH #2
1592		ADD3:	160300	;BASE ADDRESS RH #3
1593	003320	ADD4:	160400	;BASE ADDRESS RH #4
1594	003322	RHCS1:	0	;CONTROL AND STATUS 1
1595	003324	RHWC:	0	;WORD COUNT
1596	003326	RHBA:	0	;BUS ADDRESS
1597	003330	RHMR2:	0	;TRANSFER CONTROL REGISTER
1598	003332	RHCS2:	0	;CONTROL AND STATUS 2
1599	003334	RHST:	0	;TESTER STATUS
1600	003336	RHER:	0	;ERROR REGISTER
1601	003340	RHAS:	0	;ATTENTION SUMMARY REG
1602	003342	RHTDB:	0	;TESTER DATA REGISTER
1603	003344	RHDB:	0	;DATA BUFFER
1604	003346	RHMR1:	0	;DIAGNOSTIC (MAINTENCE) REGISTER
1605	003350			
1606	003352			
1607	003354			

1608 003356 000000
1609 003360 000000
1610 003362 000000
1611 003364 000000

RHDT: 0
RHBAE: 0
RHCS3: 0
RHCS1B: 0

;DRIVE TYPE REGISTER
;BUS ADDRESS EXTENTION
;CONTROL AND STATUS 3
;HIGH BYTE OF RHCS1 REG.

1612
1613 003366 000000
1614 003370 000000
1615 003372 000000
1616 003374 000000

DEVIC1: 0
DEVIC2: 0
DEVIC3: 0
DEVIC4: 0

;ADDRESS OF RH #1
;ADDRESS OF RH #2
;ADDRESS OF RH #3
;ADDRESS OF RH #4

1617
1618 003376 000000
1619 003400 000000

DEVIC5: 0
DEVIC6: 0

;DEVICE COUNTER
;USED TO CONSTRUCT REG. ADDRESSES

1620

;OFF11 WILL BE USED AS A CALCULATION LOCATION

1621

1622

1623 003402 000000

OFF11: 0

;REG. CALCULATION LOCATION

1624 177740

LERADD= 177740

;LOW ERROR ADDRESS REG.

1625 177742

HERADD= 177742

;HIGH ERROR ADDRESS REG.

1626 177744

MEMERR= 177744

;MEMORY SYSTEM ERROR REG.

1627 003404 000000

REGENO: 0

;REGISTER ENDING ADDRESS

1628 003406 000000

VECADD: 0

;VECTOR ADDRESS

1629 003410 000000

RETAIN: 0

1630

::*****

;REGISTER STORAGE ADDRESSES

1631

::*****

1632

1633

1634

1635 003412 000000

AS: 0

;ATTENTION SUMMARY

1636 003414 000000

BA: 00

;BUS ADDRESS

1637 003416 000000

BAE: 00

;BUS ADDRESS EXTENTION

1638 003420 000000

CS1: 00

;CONTROL AND STATUS 1

1639 003422 000000

CS2: 00

;CONTROL AND STATUS 2

1640 003424 000000

CS3: 00

;CONTROL AND STATUS 3

1641 003426 000000

DB: 00

;DATA BUFFER

1642 003430 000000

DR: 00

;DIAGNOSTIC REGISTER

1643 003432 000000

DS1: 00

;TESTER STATUS

1644 003434 000000

DT: 00

;DRIVE TYPE

1645 003436 000000

ER1: 00

;ERROR REGISTER

1646 003440 000000

TC: 00

;TRANSFER CONTROL

1647 003442 000000

TDR: 00

;TESTER DATA REGISTER

1648 003444 000000

WC: 0

;WORD COUNT

1649

::*****

;BITS AND BIT PATTERNS

1650

::*****

1651

1652

1653

1654 052525

AB= 52525

;ALTERNATE BIT PATTERN

1655 125252

OAB= 125252

;OPPOSITE ALTERNATE BIT PATTERN

1656 000000

ZERO= 0

;CONSTANT ZERO

1657 000001

ONE= 1

;CONSTANT 1

1658 000002

TWO= 2

;CONSTANT 2

1659

::*****

;FUNCTION CODES

1660

::*****

1661

NOOP= 01 ;NO OPERATION, RESETS GO BIT

1662

1663 000001

1664		;;*****		
1665	000051	WRCH0= 51		; THESE WRCH BITS ARE WRITE/CHECK
1666	000052	WRCH1= 52		; CODES IF THE CODE IS AN ODD
1667	000053	WRCH2= 53		; NUMBER THE GO BIT IS INCLUDED
1668	000054	WRCH3= 54		; IF THEY ARE EVEN GO BIT IS NOT INCLUDED
1669	000055	WRCH4= 55		
1670	000056	WRCH5= 56		
1671	000057	WRCH6= 57		
1672		;;*****		
1673				
1674				
1675	000071	READ0= 71		; READ CODES
1676	000072	READ1= 72		; IF THE CODE IS AN ODD NUMBER
1677	000073	READ2= 73		; THE GO BIT IS INCLUDED
1678	000074	READ3= 74		
1679	000075	READ4= 75		
1680	000076	READ5= 76		
1681	000077	READ6= 77		
1682		;;*****		
1683				
1684				
1685	000061	WRITE0= 61		; WRITE CODES
1686	000062	WRITE1= 62		; IF THE CODE IS AN ODD NUMBER
1687	000063	WRITE2= 63		; THE GO BIT IS INCLUDED
1688	000064	WRITE3= 64		; IF IT IS EVEN THE GO BIT
1689	000065	WRITE4= 65		; IS NOT INCLUDED
1690	000066	WRITE5= 66		
1691	000067	WRITE6= 67		
1692		;;*****		
1693				
1694				
1695	000011	DRCLR= 11		; CLEARS ALL ERROR BITS IN THE DRIVE
1696				; AND SETS THE DRIVE READY BIT
1697		;;*****		
1698				
1699	000031	SEARCH= 31		; SETS A ONE SHOT WHICH SETS
1700				; ATA AFTER 100USEC + OR MINUS 20%
1701		;;*****		
1702				
1703				
1704				
1705				
1706	003446 000000	BITCNT: 0		; BIT COUNTER
1707	003450 000000	LOOCNT: 0		; LOOP CPUNT
1708	003452 000000	PASS: 0		; PASS COUNT FOR THE LARGE TRANSFER TEST
1709		;;*****		
1710				
1711				
1712				
1713				
1714	003454 000000	TSTNM: 0		; TEST NO. STORAGE
1715	003456 000000	OFFSET: 0		; OFFSET FOR ERROR HEADER
1716	003460 000000	HEDDAD: 0		; USE TO FIND HEADER ERROR MESSAGE
1717		;;*****		
1718				
1719				

J03

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 ERROR POINTER TABLE

MACY11 27(732) 01-OCT-76 09:03 PAGE 36

1720		004000
1721	004000	000000
1722	004002	000000
1723		004100
1724	004100	000000
1725	004102	000000
1726	004104	000000
1727	004106	000000
1728	004110	000000
1729	004112	000000
1730	004114	000000
1731	004116	000000
1732		
1733		
1734		
1735		
1736		
1737	004120	177777
1738	004122	000000
1739		
1740	004124	000000
1741	004126	000000
1742	004130	000000
1743	004132	000000
1744	004134	000000
1745	004136	000000
1746	004140	000000
1747	004142	000000

.=4000	
EVENAD:	0
ODDAD:	0
.=4100	
RBUF:	0
RBUF1:	00
RBUF2:	00
RBUF3:	00
RBUF4:	00
RBUF5:	00
RBUF6:	00
RBUF7:	0

;EVEN ADDRESS
;ODD ADDRESS

::*****
: THESE ARE FOR THE CLEARS TEST
:*****

MINUS:	-1
BEFORE:	0
SCS1:	0
SCS2:	00
SCS3:	00
SST:	00
SER:	00
SRHBA:	00
SRHDB:	0
SRHWC:	0

K03

 MASSBUS RH70 AND RH11 DIAGNOSTIC
 DZRHBC.P11 ERROR POINTER TABLE

MACY11 27(732) 01-OCT-76 09:03 PAGE 37

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1748
1749
1750 004144 005000
1751 004146 005100
1752 004150 000421
1753 004152 005000
1754 004154 005037 001174
1755 004160 005137 001174
1756 004164 000413
1757 004166 005000
1758 004170 005100
1759 004172 000137 004560
1760 004176 012737 000074 003404
1761 004204 012737 000774 003406
1762 004212 005000
1763
1764
1765 004214
1766
1767
1768 004214 012706 001100
1769 004220 005026
1770 004222 022706 001140
1771 004226 001374
1772 004230 012706 000750
1773
1774 004234 012737 072530 000020
1775 004242 012737 000340 000022
1776 004250 012737 074204 000030
1777 004256 012737 000340 000032
1778 004264 012737 074734 000034
1779 004272 012737 000340 000036
1780 004300 012737 073000 000024
1781 004306 012737 000340 000026
1782 004314 005037 001212
1783 004320 005037 001214
1784 004324 012737 000001 001115
1785 004332 012737 004332 001106
1786 004340 012737 004340 001110
1787
1788
1789 004346 013746 000004
1790 004352 012737 004406 000004
1791 004360 012737 177570 001140
1792 004366 012737 177570 001142
1793 004374 022777 177777 174536
1794 004402 001012
1795
1796 004404 000403
1797 004406 012716 004414
1798 004412 000002
1799 004414 012737 000176 001140
1800 004422 012737 000174 001142
1801 004430 012637 000004
1802
1803 004434 005700

;;*****
BEGIN: CLR RO ;GET SKIP FLAG READY
      COM RO ;SET SKIP FLAG
      BR START ;GO TO START
BEGIN3: CLR RO ;GET SKIP FLAG READY
      CLR $REG5 ;CLR ALTERNATE START FLAG
      COM $REG5 ;SET FOR ALTERNATE START
      BR START ;START PROGRAM
BEGIN2: CLR RO ;GET RO READY
      COM RO ;TO BE COMPLIMENTED
      JMP @TST1 ;ENTER DIAG. FOR NEXT PASS
      MOV #74,@AREGEND
      MOV #774,@VECCAD
      CLR RO ;CLEAR THE SKIP FLAG
;;*****

START:
.SBTL INITIALIZE THE COMMON TAGS
;;CLEAR THE COMMON TAGS ($CMTAG) AREA
      MOV #SCMTAG,R6 ;FIRST LOCATION TO BE CLEARED
      CLR (R6)+ ;CLEAR MEMORY LOCATION
      CMP #SWR,R6 ;;DONE?
      BNE -6 ;;LOOP BACK IF NO
      MOV #STACK,SP ;SETUP THE STACK POINTER
;;INITIALIZE A FEW VECTORS
      MOV #SSCOPE,@IOTVEC ;IOT VECTOR FOR SCOPE ROUTINE
      MOV #340,@IOTVEC+2 ;LEVEL 7
      MOV #ERROR,@EMTVEC ;EMT VECTOR FOR ERROR ROUTINE
      MOV #340,@EMTVEC+2 ;LEVEL 7
      MOV #STRAP,@TRAPVEC ;TRAP VECTOR FOR TRAP CALLS
      MOV #340,@TRAPVEC+2 ;LEVEL 7
      MOV #SPWRDN,@PWRVEC ;POWER FAILURE VECTOR
      MOV #340,@PWRVEC+2 ;LEVEL 7
      CLR $TIMES ;INITIALIZE NUMBER OF ITERATIONS
      CLR $ESCAPE ;CLEAR THE ESCAPE ON ERROR ADDRESS
      MOVB #1,$ERMAX ;ALLOW ONE ERROR PER TEST
      MOV #,$SLPADR ;INITIALIZE THE LOOP ADDRESS FOR SCOPE
      MOV #,$SLPERR ;SETUP THE ERROR LOOP ADDRESS
;;SIZE FOR A HARDWARE SWITCH REGISTER. IF NOT FOUND OR IT IS
;;EQUAL TO A "-1" SETUP FOR A SOFTWARE SWITCH REGISTER.
      MOV @ERRVEC, -(SP) ;SAVE ERROR VECTOR
      MOV #64$,@ERRVEC ;SET UP ERROR VECTOR
      MOV #DSWR,SWR ;SETUP FOR A HARDWARE SWICH REGISTER
      MOV #DDISP,DISPLAY ;AND A HARDWARE DISPLAY REGISTER
      CMP #-1,@SWR ;TRY TO REFERENCE HARDWARE SWR
      BNE 66$ ;BRANCH IF NO TIMEOUT TRAP OCCURRED
      ;AND THE HARDWARE SWR IS NOT = -1
      BR 65$ ;BRANCH IF NO TIMEOUT
      ;SET UP FOR TRAP RETURN
64$: MOV #65$, (SP)
65$: MOV #SWREG,SWR ;POINT TO SOFTWARE SWR
      MOV #DISPREG,DISPLAY ;RESTORE ERROR VECTOR
66$: MOV (SP)+,@ERRVEC
      TST RO ;WAS IT A RESTART

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1804 004436 100450 BMI AROUND ;YES, SKIP TYPING
1805 004440 104401 004446 TYPE 68$ ;TYPE ASCIZ STRING
1806 004444 000427 BR 67$ ;GET OVER THE ASCIZ
1807 ;68$: .ASCIZ <15><12>/RH 11 AND 70 I O AND CONTROLLER DIAGNOSTIC/
1808 004524 ;67$: TYPE 70$ ;TYPE ASCIZ STRING
1809 004524 104401 004532 BR 69$ ;GET OVER THE ASCIZ
1810 004530 000413 ;70$: .ASCIZ <15><12>/MAINDEC-11-DZRHBC- /
1811 ;69$:
1812 004560 AROUND:
1813 004560
1814
1815 ;*****
1816 ;*TEST 1 THIS IS THE RH ADDRESS DECODE TEST
1817 ;*THIS PROGRAM WILL ALLOW THE OPERATOR TO SAY
1818 ;*WHICH RH IS ON THE BUS AND WHAT ITS BASE
1819 ;*ADDRESS IS. THE RH IS THEN TESTED FOR A
1820 ;*RESPONSE AND CHECKED FOR A TESTER BEING
1821 ;*CONNECTED.
1822 ;*****
1823 004560 000004 ;ST1: SCOPE
1824 004562 012737 000001 001212 MOV #1, $TIMES ;DO 1 ITERATION
1825 004570 012737 047120 000114 MOV #PARITY, 2*114
1826 004576 012706 000750 MOV #STACK, SP
1827 004602 012737 000340 000116 MOV #340, 2*116
1828 004610 012737 046666 000004 MOV #TIEOUT, 2*ERRVEC ;SET UP TIMEOUT
1829 004616 012737 000340 000006 MOV #340, 2*ERRVEC+2 ;SETUP PRIORITY
1830 004624 005700 TST RC ;SKIP TYPING ?
1831 004626 001403 BEQ SKIPIN ;NO
1832 004630 005000 CLR R0 ;CLEAR SKIP FLAG
1833 004632 000137 006562 JMP 2*114 ;GET OUT OF TEST
1834 004636 005001 SKIPIN: CLR R1 ;GET R1 READY
1835 004640 005737 001174 TST $REGS ;IS IT AN ALTERNATE START
1836 004644 001402 BEQ SLEUTH ;NO
1837 004646 000137 004656 JMP KONG ;YES DO ALTERNATE SETUP
1838 004652 000137 005100 SLEUTH: JMP ADIERR ;DO REGULAR SETUP
1839 004656 005037 001174 KONG: CLR $REGS ;RESET ALT. START FLAG
1840 004662 104401 004670 TYPE 65$ ;TYPE ASCIZ STRING
1841 004666 000416 BR 64$ ;GET OVER THE ASCIZ
1842 ;65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH /
1843 ;64$:
1844 004724 RDOCT
1845 004726 104410 MOV (SP)+, DEVIC1 ;GET BASE ADDRESS
1846 004732 012637 003366 TYPE 67$ ;TYPE ASCIZ STRING
1847 004736 104401 004740 BR 66$ ;GET OVER THE ASCIZ
1848 ;67$: .ASCIZ <15><12>/TYPE RH VECTOR ADDRESS /
1849 ;66$:
1850 004772 RDOCT
1851 004774 104410 MOV (SP)+, VECADD ;GET VECTOR ADDRESS
1852 005000 012637 003406 TYPE 69$ ;TYPE ASCIZ STRING
1853 005004 104401 005006 BR 68$ ;GET OVER THE ASCIZ
1854 ;69$: .ASCIZ <15><12>/HOW MANY REGISTERS ARE YOU JUMPERED FOR /
1855 ;68$:
1856 005062 RDOCT
1857 005064 104410 MOV (SP)+, REGEND ;GET NUMBER OF REG
1858 005070 012637 003404 ROL REGEND ;MULT BY 2
1859 005074 000137 005414 JMP G11 ;GO CREATE ADDRESSES

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1860 005100 013737 003320 003366 AD1ERR: MOV ADD1,DEVIC1 ;SETUP DEVICE 1
1861 005106 012737 005200 000004 MOV #AD2ERR,ERRVEC ;FOR TIMEOUT
1862 005114 005777 176202 TST 2ADD2 ;IS THERE A DEVICE
1863 005120 013737 003322 003370 MOV ADD2,DEVIC2 ;YES
1864 005126 012737 005220 000004 MOV #AD3ERR,ERRVEC ;FOR TIMEOUT
1865 005134 005777 176164 TST 2ADD3 ;IS THERE A DEVICE
1866 005140 013737 003324 003372 MOV ADD3,DEVIC3 ;YES
1867 005146 012737 005240 000004 MOV #AD4ERR,ERRVEC ;FOR TIMEOUT
1868 005154 005777 176146 TST 2ADD4 ;IS THERE A DEVICE
1869 005160 013737 003326 003374 MOV ADD4,DEVIC4 ;YES
1870 005166 012737 046666 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1871 005174 000137 006066 JMP RESTAR ;TEST DEVICES
1872 005200 005037 003370 AD2ERR: CLR DEVIC2 ;NO DEVICE 2
1873 005204 012737 046666 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1874 005212 022626 CMP (SP)+,(SP)+ ;CORRECT STACK
1875 005214 000137 006066 JMP RESTAR ;TEST DEVICES
1876 005220 005037 003372 AD3ERR: CLR DEVIC3 ;NO DEVICE 3
1877 005224 012737 046666 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1878 005232 022626 CMP (SP)+,(SP)+ ;CORRECT STACK
1879 005234 000137 006066 JMP RESTAR ;TEST DEVICES
1880 005240 005037 003374 AD4ERR: CLR DEVIC4 ;NO DEVICE 4
1881 005244 012737 046666 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1882 005252 022626 CMP (SP)+,(SP)+ ;CORRECT STACK
1883 005254 000137 006066 JMP RESTAR ;TEST DEVICES
1884 005260 005737 000042 GIG0: TST 2#42 ;IS THERE A MONITOR
1885 005264 001402 BEQ GIG1 ;NO
1886 005266 000137 046072 JMP SEOP ;YES EXIT
1887 005272 022737 160100 003366 GIG1: CMP #160100,DEVIC1 ;ARE WE HERE AFTER 210
1888 005300 001402 BEQ SA200 ;NO, 200
1889 005302 000137 004656 JMP KONG ;GET NEW ADDRESS FOR 210
1890 005306 SA200:
1891 005306 104401 005314 TYPE 65$ ;:TYPE ASCIZ STRING
1892 005312 000420 BR 64$ ;:GET OVER THE ASCIZ
1893 64$: 65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH #1 /
1894 005354
1895 005354 104410 RDOCT
1896 005356 012637 003366 MOV (SP)+,DEVIC1 ;GET BASE ADDRESS FOR RH1
1897 005362 105737 001103 TSTB $ERFLG ;ARE WE HERE BECAUSE OF AN ADDRESS ERROR
1898 005366 001405 BEQ G01 ;NO,GET READY FOR NEXT ADDRESS
1899 005370 005737 003366 TST DEVIC1 ;IS IT A ZERO
1900 005374 001007 BNE G11 ;NO
1901 005376 000137 005272 JMP GIG1 ;NEED FIRST ADDRESS
1902 005402 005737 003366 G01: TST DEVIC1 ;DID HE CORRECT WITH A 0
1903 005406 001012 BNE GIG01 ;GET BASE FOR RH # 2
1904 005410 000137 005272 JMP GIG1 ;NEED ADDRESS
1905 005414 013737 003366 003400 G11: MOV DEVIC1,DEVIC5 ;GET READY TO CREATE REG. ADDRESS
1906 005422 012777 005260 175760 MOV #GIG0,2RETAIN ;SAVE RETURN ADDRESS
1907 005430 000137 006160 JMP GIG04 ;CONSTRUCT REGISTER ADDRESSES
1908 005434 005737 000042 GIG01: TST 2#42 ;IS THER A MONITOR
1909 005440 001402 BEQ GIG2 ;NO
1910 005442 000137 046072 JMP SEOP ;EXIT
1911 005446 GIG2:
1912 005446 104401 005454 TYPE 65$ ;:TYPE ASCIZ STRING
1913 005452 000420 BR 64$ ;:GET OVER THE ASCIZ
1914 64$: 65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH #2 /
1915 005514

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N03

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 40
DZRHBC.P11 T1 THIS IS THE RH ADDRESS DECODE TEST

1916	005514	104410		RDOCT			:GET VALUE
1917	005516	012637	003370	MOV	(SP)+,DEVIC2		:SAVE ADDRESS
1918	005522	105737	001103	TSTB	\$ERFLG		:ARE WE HERE BECAUSE OF ERROR
1919	005526	001405		BEQ	G02		:NO
1920	005530	005737	003370	TST	DEVIC2		:IS IT 0
1921	005534	001007		BNE	G12		:NO
1922	005536	000137	045316	JMP	RESTAT		:SET UP FOR RH #1
1923	005542	005737	003370	TST	DEVIC2		:IS IT 0
1924	005546	001012		BNE	GIG02		:NO,GET NEXT ADDRESS
1925	005550	000137	006066	JMP	RESTAR		:CREATE ADDRESS FOR RH#1
1926	005554	013737	003370	MOV	DEVIC2,DEVIC5		:GET READY TO CREATE
1927	005562	012777	005434	MOV	#GIG01,ARETAIN		:SAVE RETURN ADDRESS
1928	005570	000137	006160	JMP	GIG04		:CREATE REG. ADDRESSES
1929	005574	005737	000042	TST	#42		:IS THERE A MONITOR
1930	005600	001402		BEQ	GIG3		:NO
1931	005602	000137	046072	JMP	\$EOP		:EXIT
1932	005606			GIG3:			
1933	005606	104401	005614	TYPE	.655	::TYPE ASCIZ STRING	
1934	005612	000420		BR	.645	::GET OVER THE ASCIZ	
1935				::655:	.ASCIZ	(15)(12)/TYPE BASE ADDRESS FOR RH #3 /	
1936	005654			.645:			
1937	005654	104410		RDOCT			
1938	005656	012637	003372	MOV	(SP)+,DEVIC3		:SAVE ADDRESS
1939	005662	105737	001103	TSTB	\$ERFLG		:ARE WE HERE DO TO ERROR
1940	005666	001405		BEQ	G03		:NO
1941	005670	005737	003372	TST	DEVIC3		:IS IT 0
1942	005674	001007		BNE	G13		:NO
1943	005676	000137	045316	JMP	RESTAT		:RESTART PASS
1944	005702	005737	003372	TST	DEVIC3		:IS IT 0
1945	005706	001012		BNE	GIG03		:GET NEXT ADDRESS
1946	005710	000137	006066	JMP	RESTAR		:CREATE RH#1 ADDRESSES
1947	005714	013737	003372	MOV	DEVIC3,DEVIC5		:SETUP TO CREATE ADDRESS
1948	005722	012777	005574	MOV	#GIG02,ARETAIN		:SAVE RETURN ADDRESS
1949	005730	000137	006160	JMP	GIG04		:CREATE ADDRESSES
1950	005734	005737	000042	TST	#42		:IS THERE A MONITOR
1951	005740	001402		BEQ	GIG4		:NO
1952	005742	000137	046072	JMP	\$EOP		:EXIT
1953	005746			GIG4:			
1954	005746	104401	005754	TYPE	.655	::TYPE ASCIZ STRING	
1955	005752	000420		BR	.645	::GET OVER THE ASCIZ	
1956				::655:	.ASCIZ	(15)(12)/TYPE BASE ADDRESS FOR RH #4 /	
1957	006014			.645:			
1958	006014	104410		RDOCT			
1959	006016	012637	003374	MOV	(SP)+,DEVIC4		:SAVE ADDRESS
1960	006022	105737	001103	TSTB	\$ERFLG		:ARE WE HERE BECAUSE OF ERROR
1961	006026	001405		BEQ	G04		:NO
1962	006030	005737	003374	TST	DEVIC4		:IS IT 0
1963	006034	001004		BNE	G14		:NO
1964	006036	000137	045316	JMP	RESTAT		:RESTART PASS
1965	006042	000137	006066	JMP	RESTAR		:GO SET UP REG. ADDRESSES
1966	006046	013737	003374	MOV	DEVIC4,DEVIC5		:GET READY TO CREATE REG. ADDRESSES
1967	006054	012777	005734	MOV	#GIG03,ARETAIN		:STORE RETURN ADDRESS
1968	006062	000137	006160	JMP	GIG04		:GO CREATE ADDRESSES
1969	006066	013737	003366	MOV	DEVIC1,DEVIC5		:GET READY TO CREATE REG. ADDRESSES
1970	006074	012777	005260	MOV	#GIG0,ARETAIN		:SAVE RETURN ADDRESS
1974	006102	104401	006110	TYPE	.655	::TYPE ASCIZ STRING	

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1972 006106 000421          BR      645          ::GET OVER THE ASCIZ
1973          ::655: .ASCIZ  <15><12>/TESTING RH #1 AT BASE ADDRESS /
1974          645:
1975 006152 013746 003366      MOV     DEVIC1,-(SP)      ::SAVE DEVIC1 FOR TYPEOUT
1976 006156 104402          TYP0C      ::GO TYPE--OCTAL ASCII(ALL DIGITS)
1977 006160 013737 003400 003402 GIG04: MOV     DEVIC5,0*OFF11      :SETUP FOR ADDRESSES
1978 006166 012702 003330      MOV     RHCS1,R2          :SET UP WHERE TO PUT THEM
1979 006172 013722 003402 45:    MOV     0*OFF11,(R2)+      :SETUP ADDRESS
1980 006176 062737 000002 003402 ADD     #TWO,0*OFF11      :SETUP NEXT ADDRESS
1981 006204 022702 003360      CMP     RHBAE,R2          :ARE ALL ADDRESSES SET UP
1982 006210 001401          BEQ     35                    :IS INFORMATION CORRECT?
1983 006212 000767          BR      45                    :NO SETUP NEW ADDRESS
1984 006214 013737 003400 003402 35:    MOV     DEVIC5,0*OFF11
1985 006222 063737 003404 003402 ADD     REGEN0,0*OFF11
1986 006230 013737 003402 003360 MOV     0*OFF11,RHBAE      :WITH CORRECT ADDRESS
1987 006236 062737 000002 003402 ADD     #2,0*OFF11      :SETUP RHCS3 ADDRESS
1988 006244 013737 003402 003362 MOV     0*OFF11,RHCS3      :WITH CORRECT ADDRESS
1989 006252 013737 003330 003364 MOV     RHCS1,RHCS1B      :SETUP RHCS1B WITH
1990 006260 005237 003364          INC     RHCS1B          :HIGH BYTE ADDRESS OF RHCS1
1991 006264 013746 000004          TSTADD: MOV     0*ERRVEC,-(SP)      :SAVE T1OUT VALUE
1992 006270 012737 006350 000004 MOV     #ADDERR,0*ERRVEC      :SETUP NEW T1OUT VALUE
1993 006276 012777 000007 175034 MOV     #7,0RHCS2          :SETUP UNIT NO.
1994 006304 005777 175020          TST     0RHCS1          :WILL RH RESPOND
1995 006310 022777 000040 175040 CMP     #40,0RHDT          :IS A TESTER THERE
1996 006316 001403          BEQ     15                    :YES, CONTINUE
1997 006320 104034          ERROR    34                    :TESTER IS NOT CONNECTED
1998 006322 000137 006352          JMP     ADDERR+2          :BAD ADDRESS
1999 006326 122777 000007 175002 15:    CMPB    #7,0RHMR2          :IS THERE ALSO A 7 FOR UNIT NO.
2000 006334 001403          BEQ     25                    :YES, CONTINUE
2001 006336 104071          ERROR    71                    :BAD ADDRESS
2002 006340 000137 006352          JMP     ADDERR+2
2003 006344 005726          25:    TST     (SP)+          :CORRECT STACK
2004 006346 000406          BR      RHTEST          :YES AN RH IS THERE
2005 006350 022626          ADDERR: CMP     (SP)+,(SP)+      :CORRECT STACK
2006 006352 012637 000004          MOV     (SP)+,0*ERRVEC      :REPLACE OLD T1OUT VALUE
2007 006356 104036          ERROR    36                    :RH DID NOT RESPOND
2008 006360 000177 175024          JMP     0RETAIN          :GET CORRECT BASE ADDRESS
2009 006364 012637 000004          RHTEST: MOV     (SP)+,0*ERRVEC      :REPLACE T1OUT VALUE
2010 006370 005701          TST     R1                    :IS IT A 70
2011 006372 001433          BEQ     RH70TT          :YES, LETS MAKE SURE
2012 006374 013746 000004          MOV     0*ERRVEC,-(SP)      :SAVE TIME OUT VALUE
2013 006400 012737 006550 000004 MOV     #RH11,0*ERRVEC      :CHECK FOR AN RH11
2014 006406 012777 000117 174746 MOV     #IPCK0!IPCK1!IPCK2!IPCK3!IE3,0RHCS3
2015          :SET ALL BITS IN RHCS3
2016 006414 012637 000004          MOV     (SP)+,0*ERRVEC      :REPLACE TIMEOUT
2017 006420          RH11BA:
2018 006420 104401 006426          TYPE     655          ::TYPE ASCIZ STRING
2019 006424 000413          BR      645          ::GET OVER THE ASCIZ
2020          ::655: .ASCIZ  <15><12>/TESTING FOR AN RH70/
2021          645:
2022 006454 005001          CLR     R1                    :SET UP RH70 FLAG
2023 006456 000137 006552          JMP     RH11+2          :EXIT
2024 006462 013746 000004          RH70TT: MOV     0*ERRVEC,-(SP)      :SAVE LOCATION 4
2025 006466 012737 006506 000004 MOV     #FAKE70,0*ERRVEC      :REPLACE ADDRESS
2026 006474 012777 000117 174660 MOV     #IPCK0!IPCK1!IPCK2!IPCK3!IE3,0RHCS3
2027          :SET ALL BITS

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C04

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 42
 DZRHBC.P11 T1 THIS IS THE RH ADDRESS DECODE TEST

2028	006502	000137	006552			JMP	RH11+2		:EXIT TEST
2029	006506	022626				FAKE70: CMP	(SP)+,(SP)+		:CORRECT STACK
2030	006510	012637	000004				MOV	(SP)+,2*ERRVEC	:CORRECT TIMEOUT
2031	006514	005001				RH70BA: CLR	R1		:GET FLAG READY
2032	006516	005101					COM	R1	:SET FOR RH11
2033	006520	104401	006526				TYPE	65\$	:TYPE ASCIZ STRING
2034	006524	000411					BR	64\$	:GET OVER THE ASCIZ
2035						::65\$:	.ASCIZ	<15><12>/TESTING AN RH11/	
2036	006550					64\$:			
2037	006550	022626				RH11: CMP	(SP)+,(SP)+		:CORRECT STACK POINTER
2038	006552	012637	000004				MOV	(SP)+,2*ERRVEC	:REPLACE TIMEOUT VALUE
2039	006556	004737	050130			ERR1: JSR	R7,ERR1ST		
2040						::*****			
2041						:*TEST 2	CLEAR TEST		
2042							:*THIS TEST CHECKS THAT ALL		
2043							:*ERROR BITS ARE CLEARED AFTER		
2044							:*THE CLEAR BIT WAS LOADED INTO		
2045							:*RHCS2 REGISTER.....		
2046						::*****			
2047	006562	000004				1ST2: SCOPE			
2048	006564	012737	000001	001212			MOV	#1,STIMES	:DO 1 ITERATION
2049	006572	005037	001210				CLR	STMP5	:GET READY TO
2050	006576	005137	001210				COM	STMP5	:SET UP FOR JSR ROUTINE
2051						::*****			
2052							:*THIS TEST IS ALSO ENTERED AT THE LABEL CLEAR		
2053							:*AT THE END OF ALL THE ERROR BIT TESTS TO SEE		
2054							:*THAT A CLEAR WILL CLEAR THE ERROR BIT SET		
2055						::*****			
2056	006602	012777	000040	174530		CLEAR: MOV	#CLR,2RHCS2		:TELL IT TO CLEAR
2057	006610	012777	000007	174522			MOV	#7,2RHCS2	:SETJP UNIT NO.
2058	006616	122777	000007	174512			CMPB	#7,2RHMR2	:HAS DEVICE BEEN SET TO 7
2059	006624	001107					BNE	1\$	:NO, FIND WHAT BIT WAS NOT SET
2060						::*****			
2061							:*THE TEST IS ENTERED HERE IF THE ERROR BIT BEING		
2062							:*FORCED SET DID NOT SET TO SEE IF ANY OTHER ERROR		
2063							:*BIT DID SET.....		
2064						::*****			
2065	006626	005701				12\$: TST	R1		:IS IT AN 11 OR A 70
2066	006630	100417					BMI	15\$	:IT'S A 70
2067	006632	005737	004122				TST	BEFORE	:ARE WE HERE FOR SHORTS
2068	006636	001406					BEQ	14\$	:NO
2069	006640	033777	004130	174514			BIT	\$CS3,2RHCS3	:ANY EXTRA ERROR BITS
2070	006646	001410					BEQ	15\$	:NO
2071	006650	000137	007204				JMP	13\$	:WE FOUND AN ERROR
2072	006654	032777	174000	174500		14\$: BIT	#WCELO!WCEHI!DPELO!DPEHI		:APE,2RHCS3
2073									:TEST ERROR BITS
2074	006662	001412					BEQ	5\$	:NO ERROR BITS SET
2075	006664	000137	007204				JMP	13\$	:GO REPORT ERROR BITS
2076	006670	005737	004122			15\$: TST	BEFORE		:ARE WE HERE FOR SHORTS
2077	006674	001405					BEQ	5\$	:NO
2078	006676	033777	004124	174424			BIT	\$CS1,2RHCS1	:YES SEE IF THERE ARE ANY
2079	006704	001070					BNE	2\$	:NONE FOUND
2080	006706	000404					BR	16\$	:GO CHECK THE NEXT ONE
2081	006710	032777	160000	174412		5\$: BIT	#TRE!SC!MCPE,2RHCS1		:ANY ERROR BITS SET IN CS1
2082	006716	001063					BNE	2\$	:YES, FIND THEM
2083	006720	005737	004122			16\$: TST	BEFORE		:ARE WE HERE FOR SHORTS

D04

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 T2 CLEAR TEST

MACY11 27(732) 01-OCT-76 09:03 PAGE 43

2084	006724	001405			BEQ	65		:NO
2085	006726	033777	004126	174404	BIT	\$CS2, JRHCS2		:ANY SHORTS
2086	006734	001065			BNE	35		:YES
2087	006736	000404			BR	175		:NO, CONTINUE
2088	006740	032777	177400	174372	BIT	#MPE!MXF!PGE!NEM!NED!UPE!		:WCE!DLT, JRHCS2
2089								:ARE ANY ERROR BITS SET IN CS2
2090	006746	001060			BNE	35		:YES, FIND THEM
2091	006750	005737	004122		TST	BEFORE		:ARE WE HERE FOR SHORTS
2092	006754	001405		175:	BEQ	75		:NO
2093	006756	033777	004132	174356	BIT	\$ST, JRHST		:ANY SHORTS ?
2094	006764	001076			BNE	95		:YES
2095	006766	000404			BR	185		:CONTINUE
2096	006770	032777	140000	174344	BIT	#ERR!ATA, JRHST		:ARE ANY ERROR BITS SET IN ER1
2097	006776	001071			BNE	95		:YES, GO FIND THEM
2098	007000	005737	004122		TST	BEFORE		:ARE WE HERE FOR SHORTS
2099	007004	001405		185:	BEQ	85		:NO
2100	007006	033777	004134	174330	BIT	\$ER, JRHERR		:YES, SEE IF THER ARE ANY
2101	007014	001046			BNE	45		:WE FOUND SOME
2102	007016	000404			BR	195		:CONTINUE
2103	007020	032777	030175	174316	BIT	#ILF!RMR!CPE!DPE!RMBEX!R		:AIL!DTE!OPI, JRHERR
2104								:ANY ERRORS IN RHERR REG.
2105	007026	001041			BNE	45		:YES, GO FIND THEM
2106	007030	005737	001210		TST	\$TMP5		:IS IT BEING USED AS A SUBROUTINE
2107	007034	001501		195:	BEQ	LEAVE		:YES
2108	007036	005037	001210		CLR	\$TMP5		:SETUP SUB ROUTINE FLAG
2109	007042	000477			BR	ERR2		:WAS THERE ANY ERRORS
2110	007044	004737	047754		JSR	R7, FOUND		:DEVICE NO. ERROR
2111	007050	017737	174264	004100	MOV	JRHCS2, RBUF		:GET CONTENTS
2112	007056	104071			ERROR	71		:DEVICE NO. NOT =7
2113	007060	004737	046302		JSR	R7, WATBIT		:FIND BIT NOT SET
2114	007064	000660			BR	125		:TEST REST OF ERROR BITS
2115	007066	004737	047634		JSR	R7, FINDIT		:RHCS1 IN ERROR
2116	007072	017737	174232	004100	MOV	JRHCS1, RBUF		:GET CONTENTS
2117	007100	104072			ERROR	72		:ERROR BIT SET IN CS1
2118	007102	004737	046302		JSR	R7, WATBIT		:WHAT BIT IS SET
2119	007106	000704			BR	165		:TEST REST OF REGISTERS
2120	007110	004737	047660		JSR	R7, LOOKFO		:ERROR IN RHCS2
2121	007114	017737	174220	004100	MOV	JRHCS2, RBUF		:GET CONTENTS
2122	007122	104073			ERROR	73		:BIT SET IN CS2
2123	007124	004737	046302		JSR	R7, WATBIT		:TELL WHAT BIT
2124	007130	000707			BR	175		:CONTINUE TEST
2125	007132	004737	047704		JSR	R7, LOOKED		:RHERR HAS A BIT SET
2126	007136	017737	174202	004100	MOV	JRHERR, RBUF		:GET CONTENTS
2127	007144	104074			ERROR	74		:ER1 HAS AN ERROR BIT SET
2128	007146	004737	046302		JSR	R7, WATBIT		:TELL WHAT BIT
2129	007152	005737	001210		TST	\$TMP5		:IS IT BEING USED AS A SUBROUTINE
2130	007156	001430			BEQ	LEAVE		:YES
2131	007160	000430			BR	ERR2		:WAS THERE ANY ERRORS
2132	007162	004737	047730		JSR	R7, FIND		:RHST HAS AN ERROR BIT SET
2133	007166	017737	174150	004100	MOV	JRHST, RBUF		:GET CONTENTS
2134	007174	104075			ERROR	75		:ERROR IN RHST
2135	007176	004737	046302		JSR	R7, WATBIT		:TELL WHAT BIT
2136	007202	000676			BR	185		:CONTINUE TEST
2137	007204	004737	050000		JSR	R7, CS3ERR		:CLEAR UNWANTED BITS
2138	007210	017737	174146	004100	MOV	JRHCS3, RBUF		:GET REG. CONTENTS
2139	007216	104176			ERROR	176		:RHCS3 HAS AN ERROR BIT SET

E04

MASSBUS RMTD AND RH11 DIAGNOSTIC
DZRMBC.F11 T2 CLEAR TEST

MACY11 27(732) 01-OCT-76 09:03 PAGE 44

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2140 007220 004737 046302      JSR      R7,WATBIT      :TELL WHAT BITS
2141 007224 000137 006670      JMP      15$           :CONT CHECK
2142 007230 000137 006626      JMP      12$           :START JSR WHYFO
2143 007234 000137 007230      WHYFO: JMP      -4          :FIND ERROR BITS SET
2144 007240 000207 007230      LEAVE: RTS      R7      :GO BACK TO PROGRAM THAT SENT YOU HERE
2145 007242 004737 050130      ERR2: JSR      R7,ERRTST
2146
2147 ::*****
2148 :*TEST 3      THIS TEST SEES IF THE TESTER IS CONNECTED
2149 :*THIS TEST SEES IF THE DEVICE CODE IS
2150 :*A 40 TO SAY AN RH SIMULATOR IS ATTACHED
2151 ::*****
2152 007246 000004      TST3:  SCOPE
2153 007250 012777 000040 174062      MOV      @CLR,DRHCS2      :CLEAR TESTER
2154 007256 012777 000007 174054      MOV      @7,DRHCS2       :UNIT SEVEN
2155 007264 017737 174066 001172      MOV      @RDOT,$REGH     :GET DRIVE TYPE
2156 007272 022737 000040 001172      CMP      @40,$REGH       :IS IT THE TESTER
2157 007300 001401      BEQ      ERR4          :WAS THERE AN ERROR
2158 007302 104034      ERROR  34          :TESTER NOT CONNECTED
2159 007304 004737 050130      ERR4: JSR      R7,ERRTST
2160
2161 ::*****
2162 :*TEST 4      WC CLEAR TEST
2163 :*THIS TEST WILL SEE THAT WHEN A CLEAR IS GIVEN
2164 :*THE WORD COUNT REGISTER REMAINS THE SAME
2165 ::*****
2166 007310 000004      TST4:  SCOPE
2167 007312 012737 000001 001212      MOV      @1,$TIMES      ;;DO 1 ITERATION
2168 007320 012777 177777 174004      MOV      @-1,DRHWC      :MAKE WC NEGATIVE
2169 007326 022777 177777 173776      CMP      @-1,DRHWC      :WAS IT LOADED CORRECTLY
2170 007334 001056      BNE      WCERR1      :NO,ALL BITS DID NOT SET
2171 007336 012777 000040 173774      HERE:  MOV      @CLR,DRHCS2 :TELL DEVICE TO CLEAR
2172 007344 017737 173760 003420      MOV      @RHCS1,CS1     :SAVE RHCS1
2173 007352 017737 173754 003444      MOV      @RHWC,WC       :SAVE WORD COUNT
2174 007360 017737 173750 003414      MOV      @RHBA,BA       :SAVE BUS ADDRESS
2175 007366 005701      TST      R1          :IS IT AN RH11
2176 007370 001406      BEQ      B7$          :NO IT'S A 70
2177 007372 005037 003416      CLR      BAE          :CLEAR BAE
2178 007376 005037 003424      CLR      CS3          :CLEAR CS3
2179 007402 000137 007422      JMP      B6$          :CONTINUE
2180 007406 017737 173746 003416      B7$:  MOV      @RHBAE,BAE   :SAVE BUS ADDRESS EXTENSION
2181 007414 017737 173742 003424      MOV      @RHCS3,CS3     :SAVE RHCS3
2182 007422 017737 173712 003422      B6$:  MOV      @RHCS2,CS2     :SAVE CS2
2183 007430 017737 173706 003432      MOV      @RHST,DS1      :SAVE TESTER STATUS
2184 007436 017737 173702 003436      MOV      @RHER,ER1      :SAVE ERROR REGISTER
2185 007444 017737 173700 003442      MOV      @RHDOB,TOR     :SAVE TESTER DATA REG.
2186 007452 017737 173660 003440      MOV      @RHMR2,TC      :SAVE MR2 TESTER REG.
2187 007460 005777 173646      TST      @RHWC          :DID IT CLEAR
2188 007464 001434      BEQ      WCERR2      :YES,CLEAR SHOULD NOT CLEAR WC
2189 007466 000137 007606      JMP      @*DOIT        :GO TO NEXT CHECK
2190 007472 005777 173634      WCERR1: TST      @RHWC      :DID ANY BITS LOAD
2191 007476 001416      BEQ      1$          :NO
2192 007500 012737 177777 001162      MOV      @-1,$REGD      :SAVE WHAT WC SHOULD HAVE BEEN
2193 007506 017737 173620 003444      MOV      @RHWC,WC       :SAVE CONTENTS OF WC
2194 007514 104042      ERROR  42          :ALL BITS DID NOT SET
2195 007516 013737 003444 001200      MOV      WC,$TMP1       :SETUP FOR WATBIT

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2196 007524 004737 046302      JSR      R7,WATBIT      ;FIND THE BIT(S)
2197 007530 000137 007336      JMP      @HERE          ;SEE IF BITS SET CLEAR
2198 007534 013737 177777 001162 1$:  MOV      -1,$REGO      ;SETUP FOR ERROR
2199 007542 017737 173564 003444  MOV      @RWC,WC        ;GET BAD DATA
2200 007550 104043          ERROR 43      ;WC DID NOT LOAD ANY BITS
2201 007552 000137 007606      JMP      @DOIT          ;GO TO NEXT REG. TEST
2202 007556 012737 177777 001162 WCERR2: MOV      @-1,$REGO      ;SETUP GOOD DATA
2203 007564 017737 173542 003444  MOV      @RWC,WC        ;GET BAD DATA
2204 007572 013737 003444 001200  MOV      WC,$TMP1       ;SETUP FOR WATBIT
2205 007600 104044          ERROR 44      ;SOME BITS CLEARED IN WC
2206 007602 004737 046302      JSR      R7,WATBIT      ;FIND THE BITS THAT CLEARED
2207 007606 004737 006602      JSR      R7,CLEER        ;CLEAR ERRORS
2208 007612 004737 050130      JSR      R7,ERRST
2209
2210 ;*****
2211 ;*TEST 5      RHBA CLEAR TEST
2212 ;*THIS TEST SEES THAT WHEN A CLEAR IS GENERATED
2213 ;*THE BUS ADDRESS REGISTER IS CLEARED
2214 ;*****
2214 007616 000004      TST5:  SCOPE
2215 007620 012777 177776 173506 ITD0:  MOV      @-2,@RHBA      ;SET ALL BITS IN RHBA
2216 007626 022777 177776 173500      CMP      @-2,@RHBA      ;ARE THEY ALL SET
2217 007634 001066      BNE      1$          ;ALL THE BITS DID NOT SET
2218 007636 012777 000040 173474      MOV      @CLR,@RHCS2    ;TELL IT TO CLEAR
2219 007644 017737 173460 003420      MOV      @RHCS1,CS1    ;SAVE RHCS1
2220 007652 017737 173454 003444      MOV      @RWC,WC        ;SAVE WORD COUNT
2221 007660 017737 173450 003414      MOV      @RHBA,BA      ;SAVE BUS ADDRESS
2222 007666 005701      TST      R1          ;IS IT AN RH11
2223 007670 001406      BEQ      87$          ;NO IT'S A 70
2224 007672 005037 003416      CLR      BAE          ;CLEAR BAE
2225 007676 005037 003424      CLR      CS3          ;CLEAR CS3
2226 007702 000137 007722      JMP      86$          ;CONTINUE
2227 007706 017737 173446 003416 87$:  MOV      @RHBAE,BAE    ;SAVE BUS ADDRESS EXTENSION
2228 007714 017737 173442 003424      MOV      @RHCS3,CS3    ;SAVE RHCS3
2229 007722 017737 173412 003422 86$:  MOV      @RHCS2,CS2    ;SAVE CS2
2230 007730 017737 173406 003432      MOV      @RHST,DS1    ;SAVE TESTER STATUS
2231 007736 017737 173402 003436      MOV      @RHER,ER1    ;SAVE ERROR REGISTER
2232 007744 017737 173400 003442      MOV      @RHTD8,TDR    ;SAVE TESTER DATA REG.
2233 007752 017737 173360 003440      MOV      @RHMR2,TC    ;SAVE MR2 TESTER REG.
2234 007760 005777 173350      TST      @RHBA          ;IS IT ZERO
2235 007764 001421      BEQ      TOIT        ;TEST IS GOOD
2236 007766 005037 001162      CLR      $REGO      ;CREATE GOOD DATA
2237 007772 017737 173336 001200      MOV      @RHBA,$TMP1    ;SETUP FOR WATBIT
2238 010000 104045          ERROR 45      ;RHBA DID NOT CLEAR
2239 010002 004737 046302      JSR      R7,WATBIT      ;FIND BITS STILL SET
2240 010006 000137 010030      JMP      @TOIT        ;GO TO NEXT REG. TEST
2241 010012 012737 177776 001162 1$:  MOV      @-2,$REGO      ;SETUP GOOD DATA
2242 010020 017737 173310 001200      MOV      @RHBA,$TMP1    ;SETUP FOR WATBIT
2243 010026 104046          ERROR 46      ;BITS DID NOT SET IN RHBA
2244 010030
2245 010030 004737 006602      JSR      R7,CLEER        ;CLEAR ERRORS
2246 010034 004737 050130      JSR      R7,ERRST
2247
2248 ;*****
2249 ;*TEST 6      RHBAE CLEAR TEST
2250 ;*THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED
2251 ;*THE BUS ADDRESS EXTENSION REGISTER IS CLEARED

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G04

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 46
 DZRHBC.F11 T6 RHBAE CLEAR TEST

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2252 010040 000004          TST6: SCOPE
2253 010042 005701          TST R1
2254 010044 100510          BMI TST7
2255 010046 012777 000077 173304 WATFOR: MOV #77, RHBAE      ; IS IT A 70 OR AN 11
2256 010054 022777 000077 173276      CMP #77, RHBAE      ; SKIP OVER TEST FOR RH11
2257 010062 001066          BNE 1$      ; SET ALL BITS IN RHBAE
2258 010064 012777 000040 173246      MOV #CLR, RHCS2      ; ARE THEY ALL SET
2259 010072 017737 173232 003420      MOV RHCS1, CS1      ; ALL THE BITS DID NOT SET
2260 010100 017737 173226 003444      MOV RHWC, WC      ; TELL IT TO CLEAR
2261 010106 017737 173222 003414      MOV RHBA, BA      ; SAVE RHCS1
2262 010114 005701          TST R1      ; SAVE WORD COUNT
2263 010116 001406          BEQ 87$      ; SAVE BUS ADDRESS
2264 010120 005037 003416          CLR BAE      ; IS IT AN RH11
2265 010124 005037 003424          CLR CS3      ; NO IT'S A 70
2266 010130 000137 010150          JMP 86$      ; CLEAR BAE
2267 010134 017737 173220 003416 87$: MOV RHBAE, BAE      ; CLEAR CS3
2268 010142 017737 173214 003424      MOV RHCS3, CS3      ; CONTINUE
2269 010150 017737 173164 003422 86$: MOV RHCS2, CS2      ; SAVE BUS ADDRESS EXTENSION
2270 010156 017737 173160 003432      MOV RHST, DS1      ; SAVE RHCS3
2271 010164 017737 173154 003436      MOV RHER, ER1      ; SAVE CS2
2272 010172 017737 173152 003442      MOV RHSTD, TDR      ; SAVE TESTER STATUS
2273 010200 017737 173132 003440      MOV RHMR2, TC      ; SAVE ERROR REGISTER
2274 010206 005777 173146          TST RHBAE      ; SAVE TESTER DATA REG.
2275 010212 001421          BEQ WATFIV      ; SAVE MR2 TESTER REG.
2276 010214 005037 001162          CLR $REGO      ; IS IT ZERO
2277 010220 017737 173134 001200      MOV RHBAE, $TMP1      ; TEST IS GOOD
2278 010226 104100          ERROR 100      ; CREATE GOOD DATA
2279 010230 004737 046302          JSR R7, WATBIT      ; SETUP FOR WATBIT
2280 010234 000137 010256          JMP #WATFIV      ; RHBAE DID NOT CLEAR
2281 010240 012737 000077 001162 1$: MOV #77, $REGO      ; FIND BITS STILL SET
2282 010246 017737 173106 001200      MOV RHBAE, $TMP1      ; GO TO NEXT REG. TEST
2283 010254 104101          ERROR 101      ; SETUP GOOD DATA
2284 010256          WATFIV:      ; SETUP FOR WATBIT
2285 010256 004737 006602          JSR R7, CLEER      ; BITS DID NOT SET IN RHBAE
2286 010262 004737 050130          JSR R7, ERRTST      ; CLEAR ERRORS
2287
2288 ;*****
2289 ;*TEST 7 RHDB CLEAR TEST
2290 ;*THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED
2291 ;*OUTPUT READY IS NEGATED
2292 ;*****
2292 010266 000004          TST7: SCOPE
2293 010270 012777 177777 173054      MOV #-1, RHDB      ; SET ALL BITS IN RHDB
2294 010276 005037 003446          CLR BITCNT      ; CLEAR BIT COUNTER
2295 010302 032777 000200 173030 18$: BIT #0R, RHCS2      ; IS OR SET
2296 010310 001015          BNE DBMG      ; BIT IS SET
2297 010312 005237 003446          INC BITCNT      ; COUNT UP
2298 010316 001371          BNE 18$      ; NOT FINISHED COUNTING
2299 010320 005037 003446          CLR BITCNT      ; GET READY TO DO IT AGAIN
2300 010324 032777 000200 173006 19$: BIT #0R, RHCS2      ; IS IT SET YET?
2301 010332 001004          BNE DBMG      ; YES
2302 010334 005237 003446          INC BITCNT      ; COUNT UP
2303 010340 001401          BEQ DBMG      ; BIT IS NOT GOING TO SET
2304 010342 000770          BR 19$
2305 010344          DBMG:
2306 010344 017737 172760 003420      MOV RHCS1, CS1      ; SAVE RHCS1
2307 010352 017737 172754 003444      MOV RHWC, WC      ; SAVE WORD COUNT

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H04

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 T7 RH08 CLEAR TEST

MACY11 27(732) 01-OCT-76 09:03 PAGE 47

2308	010360	017737	172750	003414		MOV	3RHBA,BA	:SAVE BUS ADDRESS
2309	010366	005701				TST	R1	:IS IT AN RH11
2310	010370	001406				BEQ	87\$	:NO IT'S A 70
2311	010372	005037	003416			CLR	BAE	:CLEAR BAE
2312	010376	005037	003424			CLR	CS3	:CLEAR CS3
2313	010402	000137	010422			JMP	86\$	:CONTINUE
2314	010406	017737	172746	003416	87\$:	MOV	3RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
2315	010414	017737	172742	003424		MOV	3RHCS3,CS3	:SAVE RHCS3
2316	010422	017737	172712	003422	86\$:	MOV	3RHCS2,CS2	:SAVE CS2
2317	010430	017737	172706	003432		MOV	3RHST,DS1	:SAVE TESTER STATUS
2318	010436	017737	172702	003436		MOV	3RHER,ER1	:SAVE ERROR REGISTER
2319	010444	017737	172700	003442		MOV	3RHTDB,TDR	:SAVE TESTER DATA REG.
2320	010452	017737	172660	003440		MOV	3RHMR2,TC	:SAVE MR2 TESTER REG.
2321	010460	032777	000200	172652		BIT	#OR,3RHCS2	:IS OUTPUT READY SET
2322	010466	001001				BNE	HURTS	:YES, CONTINUE TEST
2323	010470	104041				ERROR	41	:OUTPUT READY DID NOT SET
2324	010472	022777	177777	172652	HURTS:	CMP	#-1,3RHDB	:DID INFO GET LOADED TO DB
2325	010500	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
2326	010504	032777	000200	172626	18\$:	BIT	#OR,3RHCS2	:IS OR SET
2327	010512	001015				BNE	DBMSG	:BIT IS SET
2328	010514	005237	003446			INC	BITCNT	:COUNT UP
2329	010520	001371				BNE	18\$	:NOT FINISHED COUNTING
2330	010522	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
2331	010526	032777	000200	172604	19\$:	BIT	#OR,3RHCS2	:IS IT SET YET?
2332	010534	001004				BNE	DBMSG	:YES
2333	010536	005237	003446			INC	BITCNT	:COUNT UP
2334	010542	001401				BEQ	DBMSG	:BIT IS NOT GOING TO SET
2335	010544	000770				BR	19\$	
2336	010546				DBMSG:			
2337	010546	012777	000040	172564		MOV	#CLR,3RHCS2	:TELL IT TO CLEAR
2338	010554	005037	003446			CLR	BITCNT	:CLEAR THE COUNTER
2339	010560	032777	000200	172552	18\$:	BIT	#OR,3RHCS2	:DID OUTPUT READY CLEAR
2340	010566	001403				BEQ	SNAF00	:YES GET OUT OF LOOP
2341	010570	005237	003446			INC	BITCNT	:INCREMENT COUNT LOOP
2342	010574	001371				BNE	18\$	:CONTINUE LOOP IF NO CARRY
2343	010576	032777	000200	172534	SNAF00:	BIT	#OR,3RHCS2	:IS OUTPUT READY CLEARED
2344	010604	001403				BEQ	1\$	:YES, EXIT TEST
2345	010606	104114				ERROR	114	:OUTPUT READY NOT CLEARED
2346								:BY SETTING CLR IN RHCS2
2347	010610	004737	007234			JSR	R7,WHYFO	:ANY ERROR BITS SET
2348	010614	004737	006602		1\$:	JSR	R7,CLEER	:CLEAR ERRORS
2349	010620	004737	050130			JSR	R7,ERRTST	
2350								:*****
2351								:*TEST 10 PROM REGISTER DECODE TEST
2352								:*THIS TEST CHECKS THAT THE PROM
2353								:*CAN ACCESS ALL REGISTERS
2354								:*****
2355	010624	000004			†ST10:	SCOPE		
2356	010626	023727	003366	160100		CMP	DEVIC1,#160100	:CHECK FOR WHAT REG END
2357	010634	001000				BNE	1\$	:WE ARE OK
2358	010636	013704	003356		1\$:	MOV	RHDT,R4	:SETUP TO TEST RH11
2359	010642	005724				TST	(R4)+	:CORRECT ADDRESS
2360	010644	005724			2\$:	TST	(R4)+	:TEST REGISTER
2361	010646	001004				BNE	3\$	:SOME INFORMATION WAS FOUND
2362	010650	023704	003360			CMP	RHBAE,R4	:ARE ALL REGISTERS CHECKED
2363	010654	001521				BEQ	ERR3	:WAS THERE ANY ERRORS

2364	010656	000772			BR	25		:TEST NOT COMPLETED
2365	010660	005744			TST	-(R4)		:CORRECT ADDRESS
2366	010662	010437	003416		MOV	R4,BAE		:SAVE ADDRESS
2367	010666	011437	001162		MOV	(R4), \$REGO		:GET CONTENTS
2368	010672	017737	172450	003412	MOV	2RHAS,AS		:GET ATTENTION SUMMARY
2369	010700	104052			ERROR	52		:FALSE INFO IN FAKE REGISTER
2370	010702	005003			CLR	R3		:GET OFFSET READY
2371	010704	013737	003330	003420	MOV	RHCS1,CS1		:GET ADDRESS TO START CHECKING
2372	010712	027737	172502	001162	29%: CMP	2CS1,\$REGO		:HAS A REGISTER BEEN FOUND THAT COMPARES
2373	010720	001412			BEQ	285		:YES,PRINT IT OUT
2374	010722	023737	003356	003420	30%: CMP	RHDT,CS1		:IS IT LAST REG IN RH11
2375	010730	001473			BEQ	ERR3		:WAS THERE ANY ERRORS
2376	010732	062737	000002	003420	ADD	#TWO,CS1		:NO,CORRECT FOR NEXT CHECK
2377	010740	062703	000004		ADD	#4,R3		:CORRECT OFFSET
2378	010744	000762			BR	295		:CONTINUE TEST
2379	010746	032737	020000	177570	28%: BIT	#SW13,2#177570		:SKIP ERROR PRINTOUT
2380	010754	001024			BNE	555		:SKIP MESSAGE
2381	010756	104401	010764		TYPE	655		:TYPE ASCIZ STRING
2382	010762	000421			BR	645		:GET OVER THE ASCIZ
2383					655%: .ASCIZ	<15><12>/REGISTER CONTENTS COMPARES TO:/		
2384	011026				645%:			
2385	011026	000163	011032		55%: JMP	275(R3)		:PRINT REGISTER
2386	011032	104053			27%: ERROR	53		:RHCS1
2387	011034	000732			BR	305		:CONTINUE TEST
2388	011036	104054			ERROR	54		:RHWC
2389	011040	000730			BR	305		:CONTINUE TEST
2390	011042	104055			ERROR	55		:RHBA
2391	011044	000726			BR	305		:CONTINUE TEST
2392	011046	104056			ERROR	56		:RHMR2
2393	011050	000724			BR	305		:CONTINUE TEST
2394	011052	104057			ERROR	57		:RHCS2
2395	011054	000722			BR	305		:CONTINUE TEST
2396	011056	104060			ERROR	60		:RHST
2397	011060	000720			BR	305		:CONTINUE TEST
2398	011062	104061			ERROR	61		:RHER
2399	011064	000716			BR	305		:CONTINUE TEST
2400	011066	104062			ERROR	62		:RHAS
2401	011070	000714			BR	305		:CONTINUE TEST
2402	011072	104063			ERROR	63		:RHTDB
2403	011074	000712			BR	305		:CONTINUE TEST
2404	011076	104064			ERROR	64		:RHDB
2405	011100	000710			BR	305		:CONTINUE TEST
2406	011102	104065			ERROR	65		:RHMR1
2407	011104	000706			BR	305		:CONTINUE TEST
2408	011106	104066			ERROR	66		:RHDT
2409	011110	000704			BR	305		:CONTINUE TEST
2410	011112	104067			ERROR	67		:RHBAE
2411	011114	000702			BR	305		:CONTINUE TEST
2412	011116	104070			ERROR	70		:RHCS3
2413	011120	004737	050130		ERR3: JSR	R7,EARTST		
2414	011124	004737	006602		JSR	R7,CLEER		:CLEAR ERRORS

;*TEST 11 RHCS3 TEST

;*THIS TEST CHECKS THE READ/WRITE BITS

;*IN THE RHCS3 REGISTER CAN BE CLEARED AND SET.


```

2420 011130 000004
2421 011132 012777 000040 172200
2422 011132 012777 000007 172172
2423 011140 012777
2424 011146 005701
2425 011150 001122
2426 011152 012737 000004 003450
2427 011160 012737 000001 001162
2428 011166 013777 001162 172166
2429 011174 017737 172162 003424
2430 011202 013737 003424 001200
2431 011210 123777 001162 172144
2432 011216 001022
2433 011220 006137 001162
2434 011224 005337 003450
2435 011230 001356
2436 011232 012737 000100 001162
2437 011240 013777 001162 172114
2438 011246 017737 172110 003424
2439 011254 023777 001162 172100
2440 011262 001451
2441 011264
2442 011264 017737 172040 003420
2443 011272 017737 172034 003444
2444 011300 017737 172030 003414
2445 011306 005701
2446 011310 001406
2447 011312 005037 003416
2448 011316 005037 003424
2449 011322 000137 011342
2450 011326 017737 172026 003416
2451 011334 017737 172022 003424
2452 011342 017737 171772 003422
2453 011350 017737 171766 003432
2454 011356 017737 171762 003436
2455 011364 017737 171760 003442
2456 011372 017737 171740 003440
2457 011400 104035
2458 011402 004737 046302
2459 011406 004737 050130
2460 011412 004737 006602
2461
2462
2463
2464
2465
2466
2467
2468
2469
2470 011416 000004
2471 011420 012737 000001 001162
2472 011426 013777 001162 171676
2473 011434 023777 001162 171670
2474 011442 001454
2475 011444 013737 003444 001200

*****
TST11: SCOPE
MOV #CLR, ARHCS2 ;CLEAR TESTER
MOV #7, ARHCS2 ;SETUP UNIT SEVEN
TST R1 ;IS IT AN RH70
BNE TST12 ;;THIS IS A RH11
MOV #4, LOOCNT ;SETUP LOOP COUNT OF FOUR
MOV #1, SREGO ;SETUP BIT TO BE TESTED
1$: MOV SREGO, ARHCS3 ;SET THE BIT
MOV ARHCS3, CS3 ;SAVE CONTENTS OF RHCS3
MOV CS3, STMP1 ;SETUP FOR WHAT BIT IF NEEDED
CMPB SREGO, ARHCS3 ;IS THE BIT SET?
BNE 2$ ;NO GO TO ERROR
ROL SREGO ;SETUP TO TEST NEXT BIT
DEC LOOCNT ;-1 TO THE LOOP COUNT
BNE 1$ ;TEST NEXT BIT
MOV #IE3, SREGO ;SET INTERRUPT BIT
MOV SREGO, ARHCS3 ;SET BIT
MOV ARHCS3, CS3 ;SAVE CONTENTS
CMP SREGO, ARHCS3 ;IS BIT SET?
BEQ ERR5 ;WAS THERE AN ERROR
2$: MOV ARHCS1, CS1 ;SAVE RHCS1
MOV ARHWC, WC ;SAVE WORD COUNT
MOV ARHBA, BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87$ ;NO IT'S A 70
CLR BAE ;CLEAR BAE
CLR CS3 ;CLEAR CS3
JMP 86$ ;CONTINUE
87$: MOV ARHBAE, BAE ;SAVE BUS ADDRESS EXTENSION
MOV ARHCS3, CS3 ;SAVE RHCS3
86$: MOV ARHCS2, CS2 ;SAVE CS2
MOV ARHST, DS1 ;SAVE TESTER STATUS
MOV ARHER, ER1 ;SAVE ERROR REGISTER
MOV ARHTDB, TDR ;SAVE TESTER DATA REG.
MOV ARHMR2, TC ;SAVE MR2 TESTER REG.
ERROR 35 ;BIT DID NOT SET
JSR R7, WATBIT ;TELL WHAT BIT POSITION IS NO GOOD
JSR R7, ERRST
JSR R7, CLEAR ;CLEAR ERRORS
*****
;TEST 12 RHWC BIT TEST
;THIS TEST CHECKS THE WORD COUNT REGISTER
;TO SEE IF ALL BITS CAN BE SET AND CLEARED
;AND CHECKS THE REGISTER USING ALTERNATE BITS
;SET (52525) AND USING (125252) TO MAKE SURE
;IT WORKS WITH ALTERNATE PATTERN.
*****
TST12: SCOPE
MOV #ONE, SREGO ;SET UP REFERENCE WORD
RHWCT: MOV SREGO, ARHWC ;MOVE BIT INTO WORD COUNT REGISTER
CMP SREGO, ARHWC ;IS BIT SET?
BEQ 1$ ;YES, CONTINUE BIT TEST
MOV WC, STMP1 ;SETUP FOR WATBIT PROG.

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K04

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 T12 RHWC BIT TEST

MACY11 27(732) 01-OCT-76 09:03 PAGE 50

2476	011452	004737	046302			JSR	R7,WATBIT	;GO TO WATBIT PROGRAM
2477	011456	017737	171646	003420		MOV	2RHCS1,CS1	;SAVE RHCS1
2478	011464	017737	171642	003444		MOV	2RHWC,WC	;SAVE WORD COUNT
2479	011472	017737	171636	003414		MOV	2RHBA,BA	;SAVE BUS ADDRESS
2480	011500	005701				TST	R1	;IS IT AN RH11
2481	011502	001406				BEQ	87\$	;NO IT'S A 70
2482	011504	005037	003416			CLR	BAE	;CLEAR BAE
2483	011510	005037	003424			CLR	CS3	;CLEAR CS3
2484	011514	000137	011534			JMP	86\$	;CONTINUE
2485	011520	017737	171634	003416	87\$:	MOV	2RHBAE,BAE	;SAVE BUS ADDRESS EXTENSION
2486	011526	017737	171630	003424		MOV	2RHCS3,CS3	;SAVE RHCS3
2487	011534	017737	171600	003422	86\$:	MOV	2RHCS2,CS2	;SAVE CS2
2488	011542	017737	171574	003432		MOV	2RHST,DS1	;SAVE TESTER STATUS
2489	011550	017737	171570	003436		MOV	2RHER,ER1	;SAVE ERROR REGISTER
2490	011556	017737	171566	003442		MOV	2RHTDB,TDR	;SAVE TESTER DATA REG.
2491	011564	017737	171546	003440		MOV	2RHMR2,TC	;SAVE MR2 TESTER REG.
2492	011572	104001				ERROR	1	;BIT WAS NOT SET IN RHWC REG
2493	011574	005737	001162		1\$:	TST	\$REGO	;WAS IT BIT 15 THAT WAS LAST TESTED
2494	011600	100403				BMI	RHWC	;YES,GO TO EXT PART OF TEST
2495	011602	006137	001162			ROL	\$REGO	;NO,THEN TEST NEXT BIT
2496	011606	000707				BR	RHWC	;DO BIT TEST AGAIN
2497	011610	012737	052525	001162	RHWC:	MOV	2AB,\$REGO	;SET UP ALTERNATE BIT PATTERN
2498	011616	013777	001162	171506		MOV	\$REGO,2RHWC	;SET ALTERNATE BITS
2499	011624	017737	171502	003444		MOV	2RHWC,WC	;SAVE RHWC CONTENTS
2500	011632	023777	001162	171472		CMP	\$REGO,2RHWC	;ARE THEY ALL SET?
2501	011640	001457				BEQ	1\$	;YES,CONTINUE TEST
2502	011642	013737	003444	001200		MOV	WC,\$TMP1	;SETUP FOR WATBIT PROG.
2503	011650	004737	046302			JSR	R7,WATBIT	;GO TO WATBIT PROGRAM
2504	011654	017737	171450	003420		MOV	2RHCS1,CS1	;SAVE RHCS1
2505	011662	017737	171444	003444		MOV	2RHWC,WC	;SAVE WORD COUNT
2506	011670	017737	171440	003414		MOV	2RHBA,BA	;SAVE BUS ADDRESS
2507	011676	005701				TST	R1	;IS IT AN RH11
2508	011700	001406				BEQ	87\$	;NO IT'S A 70
2509	011702	005037	003416			CLR	BAE	;CLEAR BAE
2510	011706	005037	003424			CLR	CS3	;CLEAR CS3
2511	011712	000137	011732			JMP	86\$	;CONTINUE
2512	011716	017737	171436	003416	87\$:	MOV	2RHBAE,BAE	;SAVE BUS ADDRESS EXTENSION
2513	011724	017737	171432	003424		MOV	2RHCS3,CS3	;SAVE RHCS3
2514	011732	017737	171402	003422	86\$:	MOV	2RHCS2,CS2	;SAVE CS2
2515	011740	017737	171376	003432		MOV	2RHST,DS1	;SAVE TESTER STATUS
2516	011746	017737	171372	003436		MOV	2RHER,ER1	;SAVE ERROR REGISTER
2517	011754	017737	171370	003442		MOV	2RHTDB,TDR	;SAVE TESTER DATA REG.
2518	011762	017737	171350	003440		MOV	2RHMR2,TC	;SAVE MR2 TESTER REG.
2519	011770	104001				ERROR	1	;TEST FAILED
2520	011772	012737	125252	001162		MOV	2AB,\$REGO	;SET UP ALTERNATE OPPOSITE BITS
2521	012000	013777	001162	171324	1\$:	MOV	\$REGO,2RHWC	;SET OPPOSITE ALTERNATE BITS
2522	012006	017737	171320	003444		MOV	2RHWC,WC	;SAVE CONTENTS OF RHWC
2523	012014	023777	001162	171310		CMP	\$REGO,2RHWC	;ARE CORRECT BITS SET?
2524	012022	001454				BEQ	ERR6	;WAS THERE AN ERROR
2525	012024	013737	003444	001200		MOV	WC,\$TMP1	;SETUP FOR WATBIT PROG.
2526	012032	004737	046302			JSR	R7,WATBIT	;GO TO WATBIT PROGRAM
2527	012036				GOOF:			
2528	012036	017737	171266	003420		MOV	2RHCS1,CS1	;SAVE RHCS1
2529	012044	017737	171262	003444		MOV	2RHWC,WC	;SAVE WORD COUNT
2530	012052	017737	171256	003414		MOV	2RHBA,BA	;SAVE BUS ADDRESS
2531	012060	005701				TST	R1	;IS IT AN RH11

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2532 012062 001406          BEQ      87$      ;NO IT'S A 70
2533 012064 005037 003416    CLR      BAE      ;CLEAR BAE
2534 012070 005037 003424    CLR      CS3      ;CLEAR CS3
2535 012074 000137 012114    JMP      86$      ;CONTINUE
2536 012100 017737 171254 003416 87$: MOV    2RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
2537 012106 017737 171250 003424      MOV    2RHCS3,CS3 ;SAVE RHCS3
2538 012114 017737 171220 003422 86$: MOV    2RHCS2,CS2 ;SAVE CS2
2539 012122 017737 171214 003432      MOV    2RHST,0S1 ;SAVE TESTER STATUS
2540 012130 017737 171210 003436      MOV    2RHER,ER1 ;SAVE ERROR REGISTER
2541 012136 017737 171206 003442      MOV    2RHTDB,TDR ;SAVE TESTER DATA REG.
2542 012144 017737 171166 003440      MOV    2RHMR2,TC ;SAVE MR2 TESTER REG.
2543 012152 104001          ERROR    1 ;OPPISITE BIT TEST FAILED
2544 012154 013737 003332 004142 ERR6: MOV    RHWC,2RHWC ;GET READY TO TEST BYTES
2545 012162 012777 000000 171142      MOV    2ZERO,2RHWC ;CLEAR WC FIRST
2546 012170 113777 004120 171744      MOVB   MINUS,2SRHWC ;CHECK LOBYTE
2547 012176 022777 000377 171126      CMP     2377,2RHWC ;ANY EXTRA BITS
2548 012204 001401          BEQ      HIBYTE ;OK SO FAR
2549 012206 104200          ERROR    200 ;HIBYTE GATE NOT WORKING PROPERLY
2550 012210 005237 004142      HIBYTE: INC    2RHWC ;GET READY FOR NEXT BYTE
2551 012214 012777 000000 171110      MOV    2ZERO,2RHWC ;CLEAR WC
2552 012222 113777 004121 171712      MOVB   MINUS+1,2SRHWC ;CHECK THE HI BYTE
2553 012230 022777 177400 171074      CMP     2177400,2RHWC ;IS IT OK
2554 012236 001401          BEQ      ALRIGT ;ITS OK
2555 012240 104200          ERROR    200 ;LOBYTE GATE NOT WORKING PROPERLY
2556 012242 004737 050130      ALRIGT: JSR    R7,ERRTST
2557 012246 012777 000000 171056      MOV    2ZERO,2RHWC ;CLEAR WORD COUNT
2558 012254 004737 006602      JSR     R7,CLEER ;CLEAR ERRORS

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*****
*TEST 13      RHBAE BIT TEST

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;THIS TEST TESTS THE RHBAE REGISTER
;ONLY IF THE RH IS AN RH70,RH11'S
;DO NOT HAVE AN RHBAE REGISTER

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*****
TST13: SCOPE

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2567 012260 000004          TST     R1      ;IS RH AN RH70
2568 012262 005701          BNE     TST14    ;;NO PASS OVER TEST
2569 012264 001104          MOV     21,2REGO ;SET UP BIT TEST
2570 012266 012737 000001 001162 BAETST: MOV    2REGO,2RHBAE ;SET BIT IN RHBAE REGISTER
2571 012274 013777 001162 171056      MOV    2RHBAE,BAE ;SAVE CONTENTS OF RHBAE REGISTER
2572 012302 017737 171052 003416      CMP     2REGO,2RHBAE ;IS IT SET?
2573 012310 023777 001162 171042      BEQ     1$ ;YES CONTINUE TEST
2574 012316 001454          MOV     BAE,2TMP1 ;SETUP FOR WATBIT PROG.
2575 012320 013737 003416 001200      JSR     R7,WATBIT ;GO TO WATBIT PROGRAM
2576 012326 004737 046302      MOV     2RHCS1,CS1 ;SAVE RHCS1
2577 012332 017737 170772 003420      MOV     2RHWC,WC ;SAVE WORD COUNT
2578 012340 017737 170766 003444      MOV     2RHBA,BA ;SAVE BUS ADDRESS
2579 012346 017737 170762 003414      TST     R1 ;IS IT AN RH11
2580 012354 005701          BEQ     87$      ;NO IT'S A 70
2581 012356 001406          CLR     BAE      ;CLEAR BAE
2582 012360 005037 003416      CLR     CS3      ;CLEAR CS3
2583 012364 005037 003424      JMP     86$      ;CONTINUE
2584 012370 000137 012410      MOV     2RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
2585 012374 017737 170760 003416 87$: MOV    2RHCS3,CS3 ;SAVE RHCS3
2586 012402 017737 170754 003424 86$: MOV    2RHCS2,CS2 ;SAVE CS2
2587 012410 017737 170724 003422

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M04

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 T13 RHBAE BIT TEST

MACY11 27(732) 01-OCT-76 09:03 PAGE 52

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2588 012416 017737 170720 003432      MOV      JRHST,DS1      ;SAVE TESTER STATUS
2589 012424 017737 170714 003436      MOV      JRHER,ER1      ;SAVE ERROR REGISTER
2590 012432 017737 170712 003442      MOV      JRHTDB,TDR      ;SAVE TESTER DATA REG.
2591 012440 017737 170672 003440      MOV      JRHMR2,TC      ;SAVE MR2 TESTER REG.
2592 012446 104002          ERROR      2      ;BIT DID NOT SET
2593 012450 022737 000040 001162 15:  CMP      #40,$REGO      ;IS IT LAST BIT TO BE TESTED
2594 012456 001403          BEQ      ERR7      ;WAS THERE AN ERROR
2595 012460 006137 001162          ROL      $REGO      ;NO, SET UP FOR NEXT BIT
2596 012464 000703          BR       BATST      ;CONTINUE TEST
2597 012466 004737 006602  ERR7:  JSR      R7,CLEER      ;CLEAR ERRORS
2598 012472 004737 050130          JSR      R7,ERRTST

2600
2601
2602
2603
2604
2605
2606
2607
2608
2609 012476 000004
2610
2611 012500 012737 000002 001162      MOV      #TWO,$REGO      ;SET UP BIT TEST
2612 012506 013777 001162 170620  BATST:  MOV      $REGO,JRHBA      ;SET BIT IN RHBA REGISTER
2613 012514 017737 170614 003414      MOV      JRHBA,BA      ;SAVE CONTENTS OF BA REGISTER
2614 012522 023777 001162 170604      CMP      $REGO,JRHBA      ;ARE CORRECT BITS SET
2615 012530 001454          BEQ      15      ;YES, CONTINUE TEST
2616 012532 013737 003414 001200      MOV      BA,$TMP1      ;SETUP FOR WATBIT PROG.
2617 012540 017737 170564 003420      MOV      JRHCS1,CS1      ;SAVE RHCS1
2618 012546 017737 170560 003444      MOV      JRHWC,WC      ;SAVE WORD COUNT
2619 012554 017737 170554 003414      MOV      JRHBA,BA      ;SAVE BUS ADDRESS
2620 012562 005701          TST      R1      ;IS IT AN RH11
2621 012564 001406          BEQ      87$      ;NO IT'S A 70
2622 012566 005037 003416          CLR      BAE      ;CLEAR BAE
2623 012572 005037 003424          CLR      CS3      ;CLEAR CS3
2624 012576 000137 012616          JMP      86$      ;CONTINUE
2625 012602 017737 170552 003416 87$:  MOV      JRHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
2626 012610 017737 170546 003424      MOV      JRHCS3,CS3      ;SAVE RHCS3
2627 012616 017737 170516 003422 86$:  MOV      JRHCS2,CS2      ;SAVE CS2
2628 012624 017737 170512 003432      MOV      JRHST,DS1      ;SAVE TESTER STATUS
2629 012632 017737 170506 003436      MOV      JRHER,ER1      ;SAVE ERROR REGISTER
2630 012640 017737 170504 003442      MOV      JRHTDB,TDR      ;SAVE TESTER DATA REG.
2631 012646 017737 170464 003440      MOV      JRHMR2,TC      ;SAVE MR2 TESTER REG.
2632 012654 104003          ERROR      3      ;NO, CORRECT BITS ARE NOT SET
2633 012656 004737 046302          JSR      R7,WATBIT      ;GO TO WATBIT PROGRAM
2634 012662 005737 001162 15:  TST      $REGO      ;WAS BIT 15 THE LAST BIT TESTED
2635 012666 100403          BMI      BATSTA      ;YES, GO TO ALTERNATE BIT TEST
2636 012670 006137 001162          ROL      $REGO      ;NO, SET UP TO TEST NEXT BIT
2637 012674 000704          BR       BATST      ;CONTINUE BIT TEST
2638 012676 012737 052525 001162  BATSTA:  MOV      #AB,$REGO      ;SET UP BIT PATTERN
2639 012704 042737 000001 001162      BIC      #ONE,$REGO      ;CLEAR BIT 0 POSITION
2640 012712 013777 001162 170414      MOV      $REGO,JRHBA      ;SET BITS IN RHBA REGISTER
2641 012720 017737 170410 003414      MOV      JRHBA,BA      ;SAVE CONTENTS OF BA REGISTER
2642 012726 023777 001162 170400      CMP      $REGO,JRHBA      ;ARE CORRECT BITS SET
2643 012734 001454          BEQ      15      ;YES, CONTINUE TEST

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2644	012736	013737	003414	001200		MOV	BA,STMP1	: SETUP FOR WATBIT PROG.
2645	012744	017737	170360	003420		MOV	ARHCS1,CS1	: SAVE RHCS1
2646	012752	017737	170354	003444		MOV	ARHWC,WC	: SAVE WORD COUNT
2647	012760	017737	170350	003414		MOV	ARHBA,BA	: SAVE BUS ADDRESS
2648	012766	005701				TST	R1	: IS IT AN RH11
2649	012770	001406				BEQ	B7\$	: NO IT'S A 70
2650	012772	005037	003416			CLR	BAE	: CLEAR BAE
2651	012776	005037	003424			CLR	CS3	: CLEAR CS3
2652	013002	000137	013022			JMP	B6\$	: CONTINUE
2653	013006	017737	170346	003416	87\$:	MOV	ARHBAE,BAE	: SAVE BUS ADDRESS EXTENSION
2654	013014	017737	170342	003424		MOV	ARHCS3,CS3	: SAVE RHCS3
2655	013022	017737	170312	003422	86\$:	MOV	ARHCS2,CS2	: SAVE CS2
2656	013030	017737	170306	003432		MOV	ARHST,DS1	: SAVE TESTER STATUS
2657	013036	017737	170302	003436		MOV	ARHER,ER1	: SAVE ERROR REGISTER
2658	013044	017737	170300	003442		MOV	ARHTD8,TDR	: SAVE TESTER DATA REG.
2659	013052	017737	170260	003440		MOV	ARHMR2,TC	: SAVE MR2 TESTER REG.
2660	013060	104053				ERROR	3	: NO, CORRECT BITS ARE NOT SET
2661	013062	004737	046302			JSR	R7,WATBIT	: GO TO WATBIT PROGRAM
2662	013066	012737	125252	001162	1\$:	MOV	ARAB,\$REGO	: SET UP OPPOSITE ALTERNATE BIT TEST
2663	013074	013777	001162	170232		MOV	\$REGO,ARHBA	: SET BITS IN RHBA REGISTER
2664	013102	017737	170226	003414		MOV	ARHBA,BA	: SAVE CONTENTS OF BA REGISTER
2665	013110	023777	001162	170216		CMP	\$REGO,ARHBA	: ARE CORRECT BITS SET
2666	013116	001454				BEQ	ERR10	: WAS THERE AN ERROR
2667	013120	013737	003414	001200		MOV	BA,STMP1	: SETUP FOR WATBIT PROG.
2668	013126				GOOFED:			
2669	013126	017737	170176	003420		MOV	ARHCS1,CS1	: SAVE RHCS1
2670	013134	017737	170172	003444		MOV	ARHWC,WC	: SAVE WORD COUNT
2671	013142	017737	170166	003414		MOV	ARHBA,BA	: SAVE BUS ADDRESS
2672	013150	005701				TST	R1	: IS IT AN RH11
2673	013152	001406				BEQ	B7\$	: NO IT'S A 70
2674	013154	005037	003416			CLR	BAE	: CLEAR BAE
2675	013160	005037	003424			CLR	CS3	: CLEAR CS3
2676	013164	000137	013204			JMP	B6\$	: CONTINUE
2677	013170	017737	170164	003416	87\$:	MOV	ARHBAE,BAE	: SAVE BUS ADDRESS EXTENSION
2678	013176	017737	170160	003424		MOV	ARHCS3,CS3	: SAVE RHCS3
2679	013204	017737	170130	003422	86\$:	MOV	ARHCS2,CS2	: SAVE CS2
2680	013212	017737	170124	003432		MOV	ARHST,DS1	: SAVE TESTER STATUS
2681	013220	017737	170120	003436		MOV	ARHER,ER1	: SAVE ERROR REGISTER
2682	013226	017737	170116	003442		MOV	ARHTD8,TDR	: SAVE TESTER DATA REG.
2683	013234	017737	170076	003440		MOV	ARHMR2,TC	: SAVE MR2 TESTER REG.
2684	013242	104003				ERROR	3	: NO, CORRECT BITS ARE NOT SET
2685	013244	004737	046302			JSR	R7,WATBIT	: GO TO WATBIT PROGRAM
2686	013250	013737	003334	004136	ERR10:	MOV	ARHBA,\$RHBA	: GET READY TO TEST BYTES
2687	013256	012777	000000	170050		MOV	#ZERO,ARHBA	: ZERO THE BUS ADDRESS
2688	013264	113777	004120	170644		MOVB	MINUS,\$SRHBA	: MOVE THE BYTE
2689	013272	022777	000376	170034		CMP	#376,ARHBA	: DID IT GET THERE ALRIGHT
2690	013300	001401				BEQ	99\$	: YES, CHECK NEXT BYTE
2691	013302	104202				ERROR	202	: HIGH BYTE DOES NOT SEEM TO BE WORKING
2692	013304	005237	004136		99\$:	INC	\$RHBA	: GET READY FOR NEXT BYTE
2693	013310	012777	000000	170016		MOV	#ZERO,ARHBA	: ZERO THE BUS ADDRESS
2694	013316	113777	004121	170612		MOVB	MINUS+1,\$SRHBA	: MOVE TO UPPER BYTE
2695	013324	022777	177400	170002		CMP	#177400,ARHBA	: DID IT GET THERE ALRIGHT
2696	013332	001401				BEQ	98\$	: YES, EXIT TEST
2697	013334	104202				ERROR	202	: LOW BYTE IS NOT WORKING PROPERLY
2698	013336	004737	006602		98\$:	JSR	R7,CLEER	: CLEAR ERRORS
2699	013342	004737	050130			JSR	R7,ERRTST	

B05

MASSBUS RMTD AND RM11 DIAGNOSTIC
DIRMBC.F11 T14 RMBA BIT TEST

MACY11 27(732) 01-OCT-76 09:03 PAGE 54

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013346 000004

013350 005037 003450
013354 012737 000001 001162
013362 013777 001162 167762
013370 005037 003446
013374 032777 000200 167726
013402 001015
013404 005237 003446
013410 001371
013412 005037 003446
013416 032777 000200 167704
013424 001004
013426 005237 003446
013432 001401
013434 000770
013436
013436 017737 167666 003420
013444 017737 167662 003444
013452 017737 167656 003414
013460 005701
013462 001406
013464 005037 003416
013470 005037 003424
013474 000137 013514
013500 017737 167654 003416
013506 017737 167650 003424
013514 017737 167620 003422
013522 017737 167614 003432
013530 017737 167610 003436
013536 017737 167606 003442
013544 017737 167566 003440
013552 032777 000200 167550
013560 001003
013562 104102
013564 004737 007234
013570 032777 000200 167542
013576 001004
013600 017737 167546 003426
013606 104041
013610 017737 167536 003426
013616 023737 001162 003426
013624 001406
013626 013737 003426 001200
013634 104004
013636 004737 046302

:TEST IS RHOB BIT TEST
:THIS TEST TESTS THE RH DATA BUFFER REGISTER
:BY FIRST ALTERNATLY SETTING AND RESETTING BITS
:IN THE RHOB REGISTER AND THEN BY USING AN
:ALTERNATE BIT PATTERN (52525) AND AN OPPISITE
:ALTERNATE BIT PATTERN (125252)

:TEST IS: SCOPE

CLR L00CNT :CLEAR LOOP COUNT
MOV #ONE, \$REGO :SET UP BIT TEST
MOV \$REGO, \$RHOB :SET BIT IN RHOB REGISTER
CLR BITCNT :CLEAR BIT COUNTER
BIT #RDY, \$RHCS1 :IS RDY SET
BNE ABLE :BIT IS SET
INC BITCNT :COUNT UP
BNE 18\$:NOT FINISHED COUNTING
CLR BITCNT :GET READY TO DO IT AGAIN
BIT #RDY, \$RHCS1 :IS IT SET YET?
BNE ABLE :YES
INC BITCNT :COUNT UP
BEQ ABLE :BIT IS NOT GOING TO SET
BR 19\$
ABLE: MOV \$RHCS1, CS1 :SAVE RHCS1
MOV \$RHWC, WC :SAVE WORD COUNT
MOV \$RHBA, BA :SAVE BUS ADDRESS
TST R1 :IS IT AN RH11
BEQ 87\$:NO IT'S A 70
CLR BAE :CLEAR BAE
CLR CS3 :CLEAR CS3
JMP 86\$:CONTINUE
87\$: MOV \$RHEAE, BAE :SAVE BUS ADDRESS EXTENSION
MOV \$RHCS3, CS3 :SAVE RHCS3
86\$: MOV \$RHCS2, CS2 :SAVE CS2
MOV \$RHST, DS1 :SAVE TESTER STATUS
MOV \$RHER, ER1 :SAVE ERROR REGISTER
MOV \$RHTD8, TOR :SAVE TESTER DATA REG.
MOV \$RHMR2, TC :SAVE MR2 TESTER REG.
BIT #RDY, \$RHCS1 :IS READY SET
BNE RDYSET :SKIP ERROR
ERROR 102 :READY DID NOT SET
JSR R7, WHYFO :ANY ERRORS SET
RDYSET: BIT #OR, \$RHCS2 :IS OR SET?
BNE ORSET :YES, IT'S SET
MOV \$RHOB, DB :SAVE CONTENTS OF RHOB REGISTER
ERROR 41 :OUTPUT READY DID NOT SET
ORSET: MOV \$RHOB, DB :SAVE CONTENTS OF REGISTER
CMP \$REGO, DB :IS CORRECT BIT SET?
BEQ 1\$:YES, CONTINUE TEST
MOV DB, \$TMP1 :SETUP FOR WATBIT PROG.
ERROR 4 :NO, CORRECT BIT IS NOT SET
JSR R7, WATBIT :GO TO WATBIT PROGRAM

2757	013642	005737	001162	15:	TST	\$REGO	: WAS BIT 15 THE LAST BIT TESTED
2758	013646	100415			BM?	DBTSTA	: YES, GO TO ALTERNATE BIT PATTERN TEST
2759	013650	022737	000001 003450		CMP	#ONE, LOOCNT	: IS IT FIRST TIME
2760	013656	001404			BEQ	25	: NO, IT'S SECOND
2761	013660	005237	003450		INC	LOOCNT	: YES
2762	013664	000137	013362		JMP	DBTST	: CONTINUE TEST
2763	013670	005037	003450	25:	CLR	LOOCNT	: CLEAR LOOP COUNT
2764	013674	006137	001162		ROL	\$REGO	: NO, SET UP TO TEST NEXT BIT
2765	013700	000630			BR	DBTST	: GO AND TEST BIT
2766	013702	022737	000001 003450	DBTSTA:	CMP	#ONE, LOOCNT	: IS IT FIRST TIME
2767	013710	001404			BEQ	15	: NO
2768	013712	005237	003450		INC	LOOCNT	: INCREMENT LOOP COUNTER
2769	013716	000137	013362		JMP	DBTST	: DO AGAIN
2770	013722	012737	052525 001162	15:	MOV	#AB, \$REGO	: SET UP BIT PATTERN TEST
2771	013730	013777	001162 167414		MOV	\$REGO, \$RHOB	: SET BITS IN REGISTER
2772	013736	005037	003446		CLR	BITCNT	: CLEAR BIT COUNTER
2773	013742	032777	000200 167370	185:	BIT	#OR, \$RHCS2	: IS OR SET
2774	013750	001015			BNE	DBOUT	: BIT IS SET
2775	013752	005237	003446		INC	BITCNT	: COUNT UP
2776	013756	001371			BNE	185	: NOT FINISHED COUNTING
2777	013760	005037	003446		CLR	BITCNT	: GET READY TO DO IT AGAIN
2778	013764	032777	000200 167346	195:	BIT	#OR, \$RHCS2	: IS IT SET YET?
2779	013772	001004			BNE	DBOUT	: YES
2780	013774	005237	003446		INC	BITCNT	: COUNT UP
2781	014000	001401			BEQ	DBOUT	: BIT IS NOT GOING TO SET
2782	014002	000770			BR	195	
2783	014004			DBOUT:			
2784	014004	017737	167320 003420		MOV	\$RHCS1, CS1	: SAVE RHCS1
2785	014012	017737	167314 003444		MOV	\$RHWC, WC	: SAVE WORD COUNT
2786	014020	017737	167310 003414		MOV	\$RHBA, BA	: SAVE BUS ADDRESS
2787	014026	005701			TST	R1	: IS IT AN RH11
2788	014030	001406			BEQ	875	: NO IT'S A 70
2789	014032	005037	003416		CLR	BAE	: CLEAR BAE
2790	014036	005037	003424		CLR	CS3	: CLEAR CS3
2791	014042	000137	014062		JMP	865	: CONTINUE
2792	014046	017737	167306 003416	875:	MOV	\$RHBAE, BAE	: SAVE BUS ADDRESS EXTENSION
2793	014054	017737	167302 003424		MOV	\$RHCS3, CS3	: SAVE RHCS3
2794	014062	017737	167252 003422	865:	MOV	\$RHCS2, CS2	: SAVE CS2
2795	014070	017737	167246 003432		MOV	\$RHST, DS1	: SAVE TESTER STATUS
2796	014076	017737	167242 003436		MOV	\$RHER, ER1	: SAVE ERROR REGISTER
2797	014104	017737	167240 003442		MOV	\$RHTDB, TDR	: SAVE TESTER DATA REG.
2798	014112	017737	167220 003440		MOV	\$RHMR2, TC	: SAVE MR2 TESTER REG.
2799	014120	032777	000200 167212		BIT	#OR, \$RHCS2	: IS OUTPUT READY ?
2800	014126	001001			BNE	25	: YES CONTINUE TEST
2801	014130	104041			ERROR	41	: OUTPUT READY DID NOT SET
2802	014132	023777	001162 167212	25:	CMP	\$REGO, \$RHOB	: ARE CORRECT BITS SET?
2803	014140	001411			BEQ	15	: YES, CONTINUE TESTS
2804	014142	017737	167204 003426		MOV	\$RHOB, DB	: SAVE CONTENTS OF REGISTER
2805	014150	013737	003426 001200		MOV	DB, \$TMP1	: SETUP FOR WATBIT TEST
2806	014156	104004			ERROR	4	: NO, CORRECT BITS ARE NOT SET
2807	014160	004737	046302		JSR	R7, WATBIT	: GO TO WATBIT PROGRAM
2808	014164	012737	125252 001162	15:	MOV	#OAB, \$REGO	: SET UP OPPOSITE ALTERNATE BIT PATTERN TEST
2809	014172	013777	001162 167152		MOV	\$REGO, \$RHOB	: SET BITS IN REGISTER
2810	014200	005037	003446		CLR	BITCNT	: CLEAR BIT COUNTER
2811	014204	032777	000200 167126	185:	BIT	#OR, \$RHCS2	: IS OR SET
2812	014212	001015			BNE	OABTST	: BIT IS SET

E05

 MASSBUS RHO AND RH11 DIAGNOSTIC
 DTRHBC.P11 T15 RHOB BIT TEST

MACY11 27(732) 01-OCT-76 09:03 PAGE 57

2813	014214	005237	003446		INC	BITCNT	:COUNT UP
2814	014220	001371			BNE	185	:NOT FINISHED COUNTING
2815	014222	005037	003446		CLR	BITCNT	:GET READY TO DO IT AGAIN
2816	014226	032777	000200	167104	195:	BIT	:IS IT SET YET?
2817	014234	001004			BNE	OABTST	:YES
2818	014236	005237	003446		INC	BITCNT	:COUNT UP
2819	014242	001401			BEQ	OABTST	:BIT IS NOT GOING TO SET
2820	014244	000770			BR	195	
2821	014246				OABTST:		
2822	014246				MYSTIC:		
2823	014246	017737	167056	003420	MOV	2RHCS1,CS1	:SAVE RHCS1
2824	014254	017737	167052	003444	MOV	2RHWC,WC	:SAVE WORD COUNT
2825	014262	017737	167046	003414	MOV	2RHBA,BA	:SAVE BUS ADDRESS
2826	014270	005701			TST	R1	:IS IT AN RH11
2827	014272	001406			BEQ	875	:NO IT'S A 7C
2828	014274	005037	003416		CLR	BAE	:CLEAR BAE
2829	014300	005037	003424		CLR	CS3	:CLEAR CS3
2830	014304	000137	014324		JMP	865	:CONTINUE
2831	014310	017737	167044	003416	875:	MOV	2RHBAE,BAE
2832	014316	017737	167040	003424	MOV	2RHCS3,CS3	:SAVE RHCS3
2833	014324	017737	167010	003422	865:	MOV	2RHCS2,CS2
2834	014332	017737	167004	003432	MOV	2RHST,DS1	:SAVE TESTER STATUS
2835	014340	017737	167000	003436	MOV	2RHER,ER1	:SAVE ERROR REGISTER
2836	014346	017737	166776	003442	MOV	2RHTDB,TDR	:SAVE TESTER DATA REG.
2837	014354	017737	166756	003440	MOV	2RHMR2,TC	:SAVE MR2 TESTER REG.
2838	014362	032777	000200	166750	BIT	2OR,2RHCS2	:IS OUTPUT READY SET
2839	014370	001001			BNE	25	:YES
2840	014372	104041			ERROR	41	:OUTPUT READY DID NOT SET
2841	014374	017737	166752	003426	25:	MOV	2RHDB,DB
2842	014402	023737	001162	003426	CMP	5REGO,DB	:SAVE CONTENTS OF REGISTER
2843	014410	001406			BEQ	ERR11	:ARE CORRECT BITS SET?
2844	014412	013737	003426	001200	MOV	DB,STMP1	:WAS THERE AN ERROR
2845	014420	104004			ERROR	4	:SETUP FOR WATBIT PROG.
2846	014422	004737	046302		JSR	R7,WATBIT	:CORRECT BITS ARE NOT SET
2847	014426	004737	006602		ERR11:	JSR	:GO TO WATBIT PROGRAM
2848	014432	004737	050130		JSR	R7,CLEER	:CLEAR ERRORS
2849					JSR	R7,ERRTST	
2850							
2851							
2852							
2853							
2854							
2855							
2856							
2857							
2858	014436	000004			1ST16:	SCOPE	
2859	014440	012777	177777	166664	MOV	8-1,2RHWC	:SETUP FOR 1 WORD
2860	014446	012777	000007	166664	MOV	87,2RHCS2	:SETUP UNIT 7
2861	014454	005701			TST	R1	:IS IT AN RH11
2862	014456	100403			BMI	15	:YES
2863	014460	012777	000000	166672	MOV	8ZERO,2RHBAE	:SETUP BUS ADDRESS EXTENSION
2864	014466	012777	001204	166640	15:	MOV	8STMP3,2RHBA
2865	014474	012777	000061	166626	MOV	8WRITED,2RHCS1	:SETUP BUS ADDRESS
2866	014502	005037	003446		CLR	BITCNT	:CLEAR BIT COUNTER
2867	014506	032777	000200	166614	185:	BIT	:IS RDY SET
2868	014514	001015			BNE	65	:BIT IS SET

 :*TEST 16 RHWC OPERATIONAL TEST

 :*THIS TEST CHECKS THAT WHEN THE WORD COUNT
 :*REGISTER IS INCREMENTED IT IS CARRIED TO THE
 :*HIGHEST BIT AND IS RETURNED TO ZERO

 :*TEST 16: SCOPE

 :*SETUP FOR 1 WORD
 :*SETUP UNIT 7
 :*IS IT AN RH11
 :*YES
 :*SETUP BUS ADDRESS EXTENSION
 :*SETUP BUS ADDRESS
 :*CLEAR BIT COUNTER
 :*IS RDY SET
 :*BIT IS SET

2869	014516	005237	003446		INC	BITCNT	:COUNT UP
2870	014522	001371			BNE	19\$	:NOT FINISHED COUNTING
2871	014524	005037	003446		CLR	BITCNT	:GET READY TO DO IT AGAIN
2872	014530	032777	000200	166572	19\$:	BIT	:RDY, ZRHCS1
2873	014536	001004			BNE	6\$	:IS IT SET YET?
2874	014540	005237	003446		INC	BITCNT	:YES
2875	014544	001401			BEQ	6\$	:COUNT UP
2876	014546	000770			BR	19\$	:BIT IS NOT GOING TO SET
2877	014550			6\$:			
2878	014550	017737	166554	003420	MOV	ZRHCS1, CS1	:SAVE RHCS1
2879	014556	017737	166550	003444	MOV	ZRHWC, WC	:SAVE WORD COUNT
2880	014564	017737	166544	003414	MOV	ZRHBA, BA	:SAVE BUS ADDRESS
2881	014572	005701			TST	R1	:IS IT AN RH11
2882	014574	001406			BEQ	87\$	:NO IT'S A 70
2883	014576	005037	003416		CLR	BAE	:CLEAR BAE
2884	014602	005037	003424		CLR	CS3	:CLEAR CS3
2885	014606	000137	014626		JMP	86\$	:CONTINUE
2886	014612	017737	166542	003416	87\$:	MOV	ZRHBAE, BAE
2887	014620	017737	166536	003424	MOV	ZRHCS3, CS3	:SAVE BUS ADDRESS EXTENSION
2888	014626	017737	166506	003422	86\$:	MOV	ZRHCS2, CS2
2889	014634	017737	166502	003432	MOV	ZRHST, DS1	:SAVE RHCS3
2890	014642	017737	166476	003436	MOV	ZRHER, ER1	:SAVE CS2
2891	014650	017737	166474	003442	MOV	ZRHTDB, TDR	:SAVE TESTER STATUS
2892	014656	017737	166454	003440	MOV	ZRHMR2, TC	:SAVE ERROR REGISTER
2893	014664	032777	000200	166436	BIT	RDY, ZRHCS1	:SAVE TESTER DATA REG.
2894	014672	001007			BNE	2\$	:SAVE MR2 TESTER REG.
2895	014674	005777	166432		TST	ZRHWC	:IS READY SET
2896	014700	001425			BEQ	3\$	:YES
2897	014702	022777	177777	166422	CMP	#-1, ZRHWC	:DOES WC=0
2898	014710	001410			BEQ	4\$	:YES
2899	014712	005777	166414	2\$:	TST	ZRHWC	:IS IT EQUAL TO OLD
2900	014716	001435			BEQ	8\$	:YES, SEE IF DATA WAS WRITTEN
2901	014720	005037	001162		CLR	\$REGO	:DID WC INCREMENT ?
2902	014724	104077			ERROR	77	:YES, EXIT TEST
2903	014726	004737	007234		JSR	R7, WHYFO	:SETUP GOOD DATA
2904	014732	023777	001204	166410	4\$:	CMP	\$TMP3, ZRHTDB
2905	014740	001414			BEQ	5\$	:RDY DID NOT SET, WC DID NOT CLEAR
2906	014742	005037	001162		CLR	\$REGO	:ARE ANY ERROR BITS SET
2907	014746	104123			ERROR	123	:WAS INFO WRITTEN TO TESTER
2908	014750	000137	015012		JMP	8\$	:INFO WAS WRITTEN TO TESTER
2909	014754	023777	001204	166366	3\$:	CMP	\$TMP3, ZRHTDB
2910	014762	001010			BNE	7\$	:SETUP GOOD DATA
2911	014764	104102			ERROR	102	:WRITE OPERATION DID NOT WORK
2912							:RH DID NOT START OPERATION
2913	014766	000137	015012		JMP	8\$	
2914	014772	005037	001162	5\$:	CLR	\$REGO	:RDY BIT NOT SET
2915	014776	104103			ERROR	103	:INFORMATION WAS WRITTEN TO TEST DB
2916							
2917							
2918							
2919	015000	000137	015012		JMP	8\$	:SETUP GOOD DATA
2920							:DURING A WRITE OPERATION RDY
2921	015004	104104		7\$:	ERROR	104	:DID NOT SET, WC DID NOT INCREMENT
2922							:BUT CORRECT INFO DID GET WRITTEN
2923							:TO TESTER
2924							

G05

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 59
 DZRHBC.P11 T16 RHWC OPERATIONAL TEST

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2925 015006 004737 007234      JSR      R7,WHYFO      ;WAS AN ERROR SET
2926 015012 004737 006602      JSR      R7,CLEAR      ;CLEAR ERRORS
2927 015016 004737 050130      JSR      R7,ERRST      ;WAS THER ANY ERRORS
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2936 015022 000004
2937 015024 012737 000001 001212  ::*****
2938                                     ::TEST 17      RHBA OPERATIONAL TEST
2939                                     ::*THIS TEST CHECKS THAT THE BUS ADDRESS REGISTER
2940                                     ::*WILL CARRY THROUGH TO THE HIGHEST BIT
2941                                     ::*IN THE BUS ADDRESS EXTENSION REGISTER OR BIT A17
2942                                     ::*IN THE RHCS1 REGISTER AFTER IT IS INCREMENTED
2943                                     ::*****
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015022	000004				1ST17: SCOPE			
015024	012737	000001	001212		MOV	#1,STIMES	::DO 1 ITERATION	
015032	005701				TST	R1	:IS IT AN 11 OR A 70	
015034	100403				BMI	1\$	:IT'S AN RH11	
015036	012777	000037	166314		MOV	#37,DRHBAE	:SETUP BAE IN RH70	
015044	012777	177776	166262	1\$:	MOV	#177776,DRHBA	:SETUP BA	
015052	012777	177777	166252		MOV	#-1,DRHWC	:SETUP WORD COUNT	
015060	005701				TST	R1	:IS IT A RH70	
015062	001404				BEQ	34\$	:YES	
015064	012777	000461	166236		MOV	#A16!WRITED,DRHCS1	:TELL IT TO WRITE	
015072	000403				BR	35\$	:SKIP OVER 70 CODE	
015074	112777	000061	166226	34\$:	MOVB	#WRITED,DRHCS1	:TELL IT TO WRITE	
015102				35\$:				
015102	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER	
015106	032777	000200	166214	18\$:	BIT	#RDY,DRHCS1	:IS RDY SET	
015114	001015				BNE	2\$	:BIT IS SET	
015116	005237	003446			INC	BITCNT	:COUNT UP	
015122	001371				BNE	18\$	:NOT FINISHED COUNTING	
015124	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN	
015130	032777	000200	166172	19\$:	BIT	#RDY,DRHCS1	:IS IT SET YET?	
015136	001004				BNE	2\$	:YES	
015140	005237	003446			INC	BITCNT	:COUNT UP	
015144	001401				BEQ	2\$	:BIT IS NOT GOING TO SET	
015146	000770				BR	19\$		
015150				2\$:				
015150	017737	166154	003420		MOV	DRHCS1,CS1	:SAVE RHCS1	
015156	017737	166150	003444		MOV	DRHWC,WC	:SAVE WORD COUNT	
015164	017737	166144	003414		MOV	DRHBA,BA	:SAVE BUS ADDRESS	
015172	005701				TST	R1	:IS IT AN RH11	
015174	001406				BEQ	87\$	:NO IT'S A 70	
015176	005037	003416			CLR	BAE	:CLEAR BAE	
015202	005037	003424			CLR	CS3	:CLEAR CS3	
015206	000137	015226			JMP	86\$	:CONTINUE	
015212	017737	166142	003416	87\$:	MOV	DRHBAE,BAE	:SAVE BUS ADDRESS EXTENSION	
015220	017737	166136	003424		MOV	DRHCS3,CS3	:SAVE RHCS3	
015226	017737	166106	003422	86\$:	MOV	DRHCS2,CS2	:SAVE CS2	
015234	017737	166102	003432		MOV	DRHST,DS1	:SAVE TESTER STATUS	
015242	017737	166076	003436		MOV	DRHER,ER1	:SAVE ERROR REGISTER	
015250	017737	166074	003442		MOV	DRHTDB,TDR	:SAVE TESTER DATA REG.	
015256	017737	166054	003440		MOV	DRHMR2,TC	:SAVE MR2 TESTER REG.	
015264	005701				TST	R1	:IS IT AN 11 OR A 70	
015266	001406				BEQ	12\$	:DO RH70 PART OF TEST	
015270	032777	001000	166032		BIT	#A17,DRHCS1	:DID A17 GET SET	
015276	001022				BNE	4\$	:YES	

H05

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 60
 DZRHBC.P11 T17 RHBA OPERATIONAL TEST

2981	015300	000137	015412			JMP	5\$		:CONT. FOR RH11
2982	015304	022777	000040	166046	12\$:	CMP	#40, JRHBAE		:DID BAE INC
2983	015312	001414				BEQ	4\$		:BAE INCREMENTED
2984	015314	022777	000037	166036		CMP	#37, JRHBAE		:IS BAE OLD VALUE
2985	015322	001420				BEQ	3\$		:BAE DID NOT INCREMENT
2986	015324	005777	166030			TST	JRHBAE		:IS BAE ZERO
2987	015330	001425				BEQ	9\$		:BAE IS ZERO
2988	015332	104105				ERROR	105		:BAE GOT MESSED UP DOING A WRITE
2989	015334	004737	007234			JSR	R7, WHYFO		:DID AN ERROR OTHER THAN NEM CAVSIT
2990	015340	000137	015430			JMP	10\$		
2991	015344	005777	165764		4\$:	TST	JRHBA		:DID BA INCREMENT ?
2992	015350	001443				BEQ	8\$		:YES, EXIT TEST
2993	015352	104112				ERROR	112		:BA DID NOT INCREMENT
2994	015354	004737	007234			JSR	R7, WHYFO		:WAS AN ERROR BIT SET
2995	015360	000137	015460			JMP	8\$		:EXIT TEST
2996	015364	104106			3\$:	ERROR	106		:BAE DID NOT INCREMENT
2997	015366	004737	007234			JSR	R7, WHYFO		:WAS AN ERROR BIT SET
2998	015372	000137	015460			JMP	8\$		:EXIT TEST
2999	015376	104107			6\$:	ERROR	107		:BAE INCREMENTED OK BUT A17 +
3000									:A16 DID NOT INC PROPERLY IN RHCS1
3001	015400	000137	015460			JMP	8\$		:EXIT TEST
3002	015404	104110			9\$:	ERROR	110		:RHBAE IS ZERO
3003	015406	000137	015460			JMP	8\$		:BIT 5 IN BAE SHOULD BE SET
3004	015412	033777	000400	165710	5\$:	BIT	A16, JRHCS1		:IS A 16 SET
3005	015420	001003				BNE	10\$		:YES, BA DID NOT INCREMENT
3006	015422	104111				ERROR	111		:A17 DID NOT SET WHEN BA WAS
3007									:INC
3008	015424	000137	015460			JMP	8\$		:EXIT TEST
3009	015430	005777	165700		10\$:	TST	JRHBA		:DOES BA =0
3010	015434	001403				BEQ	11\$		:YES, BA INCREMENTED
3011	015436	104112				ERROR	112		:BA DID NOT INCREMENT
3012	015440	000137	015460			JMP	8\$		:EXIT TEST
3013	015444	005701			11\$:	TST	R1		:IS IT A 70 OR 11
3014	015446	100403				BMI	13\$		:GO TO CORRECT ERROR
3015	015450	104076				ERROR	76		:BA INCREMENTED BUT DID NOT
3016									:CARRY TO BAE
3017	015452	000137	015460			JMP	8\$		:GET OUT OF TEST
3018	015456	104113			13\$:	ERROR	113		:BA INCREMENTED BUT IT DID NOT
3019									:CARRY OVER TO A17 + A16
3020	015460	004737	006602		8\$:	JSR	R7, CLEER		:CLEAR ERRORS
3021	015464	004737	050130			JSR	R7, ERTST		:WAS THERE ANY ERRORS
3022									
3023									
3024									
3025									
3026									
3027									
3028	015470	000004							
3029	015472	005701							
3030	015474	001404							
3031	015476	013777	003362	165630		MOV	RHCS3, JRHBA		
3032	015504	000403				BR	41\$		
3033									
3034	015506	012777	177702	165620	40\$:	MOV	#177702, JRHBA		:SET UP BUS ADDRESS
3035	015514	005701			41\$:	TST	R1		:IS IT AN RH70
3036	015516	100403				BMI	9\$		:NO SKIP RH11 PORTION

3037	015520	012777	000077	165632		MOV	#77,DRHBAE	:SET UP BAE REGISTER
3038	015526	012777	177777	165576	99:	MOV	#-1,DRHWC	:SET WORD COUNT TO ONE WORD
3039	015534	012777	000007	165576		MOV	#7,DRHCS2	:SET UNIT NUMBER
3040	015542	012777	001471	165560		MOV	#A16!A17!READ0,DRHCS1	:TELL IT TO READ
3041	015550	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
3042	015554	032777	000200	165546	189:	BIT	#RDY,DRHCS1	:IS RDY SET
3043	015562	001015				BNE	DELTA	:BIT IS SET
3044	015564	005237	003446			INC	BITCNT	:COUNT UP
3045	015570	001371				BNE	189	:NOT FINISHED COUNTING
3046	015572	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
3047	015576	032777	000200	165524	199:	BIT	#RDY,DRHCS1	:IS IT SET YET?
3048	015604	001004				BNE	DELTA	:YES
3049	015606	005237	003446			INC	BITCNT	:COUNT UP
3050	015612	001401				BEQ	DELTA	:BIT IS NOT GOING TO SET
3051	015614	000770				BR	199	
3052	015616							
3053	015616	017737	165516	003422		MOV	DRHCS2,CS2	:SAVE CONTENTS OF RHCS2
3054	015624	017737	165500	001162		MOV	DRHCS1,\$REGO	:SET UP NEEDED BITS ONLY
3055	015632	042737	027777	001162		BIC	#GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,\$REGO	
3056	015640	042777	100000	165514		BIC	#APE,DRHCS3	
3057								:CLEAR BITS NOT NEEDED
3058	015646	017737	165456	003420		MOV	DRHCS1,CS1	:SAVE RHCS1
3059	015654	017737	165452	003444		MOV	DRHWC,WC	:SAVE WORD COUNT
3060	015662	017737	165446	003414		MOV	DRHBA,BA	:SAVE BUS ADDRESS
3061	015670	005701				TST	R1	:IS IT AN RH11
3062	015672	001406				BEQ	879	:NO IT'S A 70
3063	015674	005037	003416			CLR	BAE	:CLEAR BAE
3064	015700	005037	003424			CLR	CS3	:CLEAR CS3
3065	015704	000137	015724			JMP	869	:CONTINUE
3066	015710	017737	165444	003416	879:	MOV	DRHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
3067	015716	017737	165440	003424		MOV	DRHCS3,CS3	:SAVE RHCS3
3068	015724	017737	165410	003422	869:	MOV	DRHCS2,CS2	:SAVE CS2
3069	015732	017737	165404	003432		MOV	DRHST,DS1	:SAVE TESTER STATUS
3070	015740	017737	165400	003436		MOV	DRHER,ER1	:SAVE ERROR REGISTER
3071	015746	017737	165376	003442		MOV	DRHTDB,TOR	:SAVE TESTER DATA REG.
3072	015754	017737	165356	003440		MOV	DRHMR2,TC	:SAVE MR2 TESTER REG.
3073	015762	032777	000200	165340		BIT	#RDY,DRHCS1	:IS READY SET
3074	015770	001003				BNE	999	:YES CONTINUE TEST
3075	015772	104102				ERROR	102	:READY NOT SET
3076	015774	004737	007234			JSR	R7,WHYFO	:ANY ERRORS SET
3077	016000	032777	004000	165332	999:	BIT	#NEM,DRHCS2	:IS NEM SET
3078	016006	001016				BNE	19	:YES CHECK TRE AND SC
3079	016010	022737	140000	001162		CMP	#SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET
3080	016016	001460				BEQ	29	:YES NEM IS IN ERROR
3081	016020	032737	040000	001162		BIT	#TRE,\$REGO	:IS JUST THE TRE BIT SET
3082	016026	001060				BNE	39	:TRE BIT MUST BE IN ERROR
3083	016030	032737	100000	001162		BIT	#SC,\$REGO	:IS JUST THE SC BIT SET
3084	016036	001060				BNE	49	:SC BIT SET ERRONIOUSLY
3085	016040	104005				ERROR	5	:NEM NOT SET IN RHCS2
3086	016042	000467				BR	89	:SET UP TO TEST AGAIN
3087	016044	022737	140000	001162	19:	CMP	#SC!TRE,\$REGO	:IS SC AND TRE SET
3088	016052	001030				BNE	229	:FIND THE ERROR
3089	016054	012737	020000	004124		MOV	#MCPE,\$CS1	:TEST FOR SHORTS
3090	016062	012737	173400	004126		MOV	#MPE!MXF!PGE!NED!UPE!WCE!DLT,\$CS2	
3091	016070	012737	174000	004130		MOV	#WCELO!WCEHI!DPELO!DPEHI!APE,\$CS3	
3092	016076	012737	000000	004132		MOV	#0,\$ST	

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3093 016104 012737 030175 004134 MOV #ILF!RMR!CPE!DPE!RMBEX!RFAIL!DTE!OPI, SER
3094 016112 012737 177777 004122 MOV #-1, BEFORE ; TELL WHYFO ITS FOR SHORTS
3095 016120 004737 007234 JSR R7, WHYFO ; TEST FOR SHORTS
3096 016124 005037 004122 CLR BEFORE ; WE HAVE CHECKED FOR SHORTS
3097 016130 000137 016222 JMP 8$ ; LEAVE THE TEST
3098 016134 032737 040000 001162 22$: BIT #TRE, $REG0 ; THEN IS THE TRE BIT SET
3099 016142 001022 BNE 6$ ; SC BIT DID NOT SEE TRE BIT
3100 016144 032737 100000 001162 BIT #SC, $REG0 ; IS THE SC BIT SET
3101 016152 001022 BNE 7$ ; TRE HAS AN OPEN GOING TO BUS
3102 016154 104006 ERROR 6$ ; TRE SET LOGIC NOT WORKING
3103 016156 000421 BR 8$ ; SET UP TO TEST AGAIN
3104 016160 104007 2$: ERROR 7$ ; NEM HAS OPEN IN LINE GOING TO BUS
3105 016162 004737 007234 JSR R7, WHYFO ; SEE IF ANY OTHER ERROR BIT IS
3106 ; SET OTHER THAN NEM
3107 016166 000415 BR 8$ ; SET UP TO TEST AGAIN
3108 016170 104010 3$: ERROR 10$ ; SOMTHING WRONG WITH TRE BIT
3109 016172 004737 007234 JSR R7, WHYFO ; SEE IF AN ERROR BIT IS SET
3110 ; OR BOTH NEM IN RHCS2 AND SC IN
3111 ; RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3112 016176 000411 BR 8$ ; SET UP TO TEST AGAIN
3113 016200 104011 4$: ERROR 11$ ; SC BIT WAS SET BY EITHER ATTN OR
3114 016202 004737 007234 JSR R7, WHYFO ; FIND WHAT ERROR BIT IS SET
3115 ; MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3116 016206 000405 BR 8$ ; SETUP TO TEST AGAIN
3117 016210 104012 5$: ERROR 12$ ; TRE WAS SET BY OTHER THAN NEM
3118 016212 004737 007234 JSR R7, WHYFO ; FIND ERROR BIT THAT SET TRE
3119 016216 000401 BR 8$ ; SETUP TO TEST AGAIN
3120 016220 104013 7$: ERROR 13$ ; TRE HAS AN OPEN GOING TO THE BUS
3121 016222 032737 041400 177570 8$: BIT #SW14!SW9!SW8, @177570 ; ANY LOOPING BEEING DONE
3122 016230 001003 BNE 21$ ; YES, LOAD TRE NO MATTER WHAT
3123 016232 105737 001103 TSTB SERFLG ; WAS THERE AN ERROR
3124 016236 001010 BNE 9$ ; SKIP TRE CHECK
3125 016240 112777 000100 165116 21$: MOVB #TREB, @RHCS1B ; LOAD TRE
3126 016246 032777 004000 165064 BIT #NEM, @RHCS2 ; DID ERROR CLEAR
3127 016254 001401 BEQ 9$ ; YES EXIT TEST
3128 016256 104050 ERROR 50$ ; LOADING TRE DID NOT CLEAR ERROR
3129 016260 004737 006602 9$: JSR R7, CLEER ; SEE IF ERRORS ARE CLEARED
3130 016264 004737 050130 JSR R7, ERRTST

;*****
;TEST 21 WCE, TRE, SC BIT TEST
;THIS TEST WILL CHECK THAT TRE AND SC SET
;WHEN A WRITE CHECK ERROR OCCURS (WCE)
;*****
1$T21: SCOPE
3138 016270 000004 MOV #-1, @RHWC ; ONE WORD TRANSFER
3139 016272 012777 177777 165032 MOV #7, @RHCS2 ; TO UNIT ONE
3140 016300 012777 000007 165032 TST R1 ; IS IT AN RH70
3141 016306 005701 BNE 9$ ; NO
3142 016310 001003 MOV #ZERO, @RHBAE ; SETUP RHBAE REGISTER
3143 016312 012777 000000 165040 9$: MOV #REG4, @RHBA ; SETUP BUS ADDRESS
3144 016320 012777 001172 165006 MOV #AB, $REG4 ; CREATE INFORMATION
3145 016326 012737 052525 001172 MOV #WRITED, @RHCS1 ; TELL IT TO WRITE
3146 016334 012777 000061 164766 CLR BITCNT ; CLEAR BIT COUNTER
3147 016342 005037 003446 18$: BIT #RDY, @RHCS1 ; IS RDY SET
3148 016346 032777 000200 164754

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K05

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 63
 DZRHBC.P11 T21 WCE,TRE,SC BIT TEST

3149	016354	001015			BNE	WCETST		;BIT IS SET
3150	016356	005237	003446		INC	BITCNT		;COUNT UP
3151	016362	001371			BNE	18\$		;NOT FINISHED COUNTING
3152	016364	005037	003446		CLR	BITCNT		;GET READY TO DO IT AGAIN
3153	016370	032777	000200	164732	19\$:	BIT	*RDY, ARHCS1	;IS IT SET YET?
3154	016376	001004			BNE	WCETST		;YES
3155	016400	005237	003446		INC	BITCNT		;COUNT UP
3156	016404	001401			BEQ	WCETST		;BIT IS NOT GOING TO SET
3157	016406	000770			BR	19\$		
3158	016410				WCETST:			
3159	016410	012777	177777	164714	MOV	*-1, ARHWC		;RESET WORD COUNT
3160	016416	012777	001172	164710	MOV	*\$REG4, ARHBA		;RESET BUS ADDRESS
3161	016424	012737	125252	001172	MOV	*OAB, \$REG4		;CREATE WRITE CHECK ERROR
3162	016432	012777	000051	164670	MOV	*WRCHO, ARHCS1		;MAKE THE ERROR
3163	016440	005037	003446		CLR	BITCNT		;CLEAR BIT COUNTER
3164	016444	032777	000200	164656	18\$:	BIT	*RDY, ARHCS1	;IS RDY SET
3165	016452	001015			BNE	WCETRE		;BIT IS SET
3166	016454	005237	003446		INC	BITCNT		;COUNT UP
3167	016460	001371			BNE	18\$		;NOT FINISHED COUNTING
3168	016462	005037	003446		CLR	BITCNT		;GET READY TO DO IT AGAIN
3169	016466	032777	000200	164634	19\$:	BIT	*RDY, ARHCS1	;IS IT SET YET?
3170	016474	001004			BNE	WCETRE		;YES
3171	016476	005237	003446		INC	BITCNT		;COUNT UP
3172	016502	001401			BEQ	WCETRE		;BIT IS NOT GOING TO SET
3173	016504	000770			BR	19\$		
3174	016506				WCETRE:			
3175	016506	017737	164626	003422	MOV	ARHCS2, CS2		;SAVE CONTENTS
3176	016514	017737	164610	001162	MOV	ARHCS1, \$REG0		;SET UP NEEDED BITS ONLY
3177	016522	042737	027777	001162	BIC	*GO! IE! RDY! A16! A17! PSEL! DVA! MCPE! READ6, \$REG0		
3178	016530	042777	100000	164624	BIC	*APE, ARHCS3		
3179								;CLEAR BITS NOT NEEDED
3180	016536	017737	164566	003420	MOV	ARHCS1, CS1		;SAVE RHCS1
3181	016544	017737	164562	003444	MOV	ARHWC, WC		;SAVE WORD COUNT
3182	016552	017737	164556	003414	MOV	ARHBA, BA		;SAVE BUS ADDRESS
3183	016560	005701			TST	R1		;IS IT AN RH11
3184	016562	001406			BEQ	87\$		;NO IT'S A 70
3185	016564	005037	003416		CLR	BAE		;CLEAR BAE
3186	016570	005037	003424		CLR	CS3		;CLEAR CS3
3187	016574	000137	016614		JMP	86\$		;CONTINUE
3188	016600	017737	164554	003416	87\$:	MOV	ARHBAE, BAE	;SAVE BUS ADDRESS EXTENSION
3189	016606	017737	164550	003424	MOV	ARHCS3, CS3		;SAVE RHCS3
3190	016614	017737	164520	003422	86\$:	MOV	ARHCS2, CS2	;SAVE CS2
3191	016622	017737	164514	003432	MOV	ARHST, DS1		;SAVE TESTER STATUS
3192	016630	017737	164510	003436	MOV	ARHER, ER1		;SAVE ERROR REGISTER
3193	016636	017737	164506	003442	MOV	ARHTDB, TOR		;SAVE TESTER DATA REG.
3194	016644	017737	164466	003440	MOV	ARHMR2, TC		;SAVE MR2 TESTER REC.
3195	016652	032777	000200	164450	BIT	*RDY, ARHCS1		;IS READY SET
3196	016660	001003			BNE	99\$		;YES CONTINUE TEST
3197	016662	104102			ERROR	102		;READY NOT SET
3198	016664	004737	007234		JSR	R7, WHYFO		;ANY ERRORS SET
3199	016670	032777	040000	164442	99\$:	BIT	*WCE, ARHCS2	;IS WCE SET
3200	016676	001016			BNE	1\$		;YES CHECK TRE AND SC
3201	016700	022737	140000	001162	CMP	*SC! TRE, \$REG0		;IS THE SC AND TRE BITS SET
3202	016706	001460			BEQ	2\$		;YES WCE IS IN ERROR
3203	016710	032737	040000	001162	BIT	*TRE, \$REG0		;IS JUST THE TRE BIT SET
3204	016716	001060			BNE	3\$		;TRE BIT MUST BE IN ERROR


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3205 016720 032737 100000 001162 BIT #SC,$REGO ;IS JUST THE SC BIT SET
3206 016726 001060 BNE 48 ;SC BIT SET ERRONIOUSLY
3207 016730 104014 ERROR 14 ;WCE NOT SET IN RHCS2
3208 016732 000467 BR 85 ;SET UP TO TEST AGAIN
3209 016734 022737 140000 001162 15: CMP #SC!TRE,$REGO ;IS SC AND TRE SET
3210 016742 001030 BNE 225 ;FIND THE ERROR
3211 016744 012737 020000 004124 MOV #MCPE,$CS1 ;TEST FOR SHORTS
3212 016752 012737 137400 004126 MOV #MPE!MXF!PGE!NEM!NED!UPE!DLT,$CS2
3213 016760 013737 160000 004130 MOV DPELO!DPEHI!APE,$CS3
3214 016766 013737 004132 004132 MOV $ST,$ST
3215 016774 013737 004134 004134 MOV $ER,$ER
3216 017002 012737 177777 004122 MOV #-1,BEFORE ;TELL WHYFO ITS FOR SHORTS
3217 017010 004737 007234 JSR R7,WHYFO ;TEST FOR SHORTS
3218 017014 005037 004122 CLR BEFORE ;WE HAVE CHECKED FOR SHORTS
3219 017020 000137 017112 JMP 85 ;LEAVE THE TEST
3220 017024 032737 040000 001162 225: BIT #TRE,$REGO ;THEN IS THE TRE BIT SET
3221 017032 001022 BNE 65 ;SC BIT DID NOT SEE TRE BIT
3222 017034 032737 100000 001162 BIT #SC,$REGO ;IS THE SC BIT SET
3223 017042 001022 BNE 75 ;TRE HAS AN OPEN GOING TO BUS
3224 017044 104006 ERROR 6 ;TRE SET LOGIC NOT WORKING
3225 017046 000421 BR 85 ;SET UP TO TEST AGAIN
3226 017050 104015 25: ERROR 15 ;WCE HAS OPEN IN LINE GOING TO BUS
3227 017052 004737 007234 JSR R7,WHYFO ;SEE IF ANY OTHER ERROR BIT IS
3228 ;SET OTHER THAN WCE
3229 017056 000415 BR 85 ;SET UP TO TEST AGAIN
3230 017060 104016 35: ERROR 16 ;SOMTHING WRONG WITH TRE BIT
3231 017062 004737 007234 JSR R7,WHYFO ;SEE IF AN ERROR BIT IS SET
3232 ;OR BOTH WCE IN RHCS2 AND SC IN
3233 ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3234 017066 000411 BR 85 ;SET UP TO TEST AGAIN
3235 017070 104011 45: ERROR 11 ;SC BIT WAS SET BY EITHER ATTN OR
3236 017072 004737 007234 JSR R7,WHYFO ;FIND WHAT ERROR BIT IS SET
3237 ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3238 017076 000405 BR 85 ;SETUP TO TEST AGAIN
3239 017100 104017 65: ERROR 17 ;TRE WAS SET BY OTHER THAN WCE
3240 017102 004737 007234 JSR R7,WHYFO ;FIND ERROR BIT THAT SET TRE
3241 017106 000401 BR 85 ;SETUP TO TEST AGAIN
3242 017110 104013 75: ERROR 13 ;TRE HAS AN OPEN GOING TO THE BUS
3243 017112 032737 041400 177570 85: BIT #SW14!SW9!SW8,@177570 ;ANY LOOPING BEEING DONE
3244 017120 001003 BNE 215 ;YES,LOAD TRE NO MATTER WHAT
3245 017122 105737 001103 TSTB $ERFLG ;WAS THERE AN ERROR
3246 017126 001010 BNE 95 ;SKIP TRE CHECK
3247 017130 112777 000100 164226 215: MOVB #TREB,@RHCS1B ;LOAD TRE
3248 017136 032777 040000 164174 BIT #WCE,@RHCS2 ;DID ERROR CLEAR
3249 017144 001401 BEQ 95 ;YES EXIT TEST
3250 017146 104050 ERROR 50 ;LOADING TRE DID NOT CLEAR ERROR
3251 017150 004737 006602 95: JSR R7,CLEER ;SEE IF ERRORS ARE CLEARED
3252 017154 004737 050130 JSR R7,ERRTST
3253
3254 ;*****
3255 ;*TEST 22 MDPE ,TRE AND SC BIT TEST
3256 ;*THIS TEST CHECKS THAT MDPE CAN BE SET IN
3257 ;*RHCS2,AND THAT MDPE SETS TRE AND SC
3258 ;*IN THE RHCS1 REGISTER.....
3259 ;*****
3260 017160 000004 TST22: SCOPE

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3261	017162	012777	000007	164150		MOV	#7, RHCS2	:SET UNIT #
3262	017170	012777	177774	164134		MOV	#-4, RHWC	:SET UP WORD COUNT
3263	017176	005701				TST	R1	:IS IT AN RH70
3264	017200	001003				BNE	9\$	:NO ITS AN RH11
3265	017202	012777	000000	164150		MOV	#ZERO, RHBAE	:SET UP BAE REGISTER
3266	017210	012777	004100	164116	9\$:	MOV	#RBUF, RHBA	:SET UP BUS ADDRESS
3267	017216	012777	000071	164104		MOV	#READ0, RHCS1	:TELL IT TO READ
3268	017224	012777	000027	164106		MOV	#PAT!7, RHCS2	:INVERT PARITY
3269	017232	017737	164102	003422		MOV	RHCS2, CS2	:SAVE CONTENTS
3270	017240	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
3271	017244	032777	000200	164056	18\$:	BIT	#RDY, RHCS1	:IS RDY SET
3272	017252	001015				BNE	UPETRE	:BIT IS SET
3273	017254	005237	003446			INC	BITCNT	:COUNT UP
3274	017260	001371				BNE	18\$	:NOT FINISHED COUNTING
3275	017262	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
3276	017266	032777	000200	164034	19\$:	BIT	#RDY, RHCS1	:IS IT SET YET?
3277	017274	001004				BNE	UPETRE	:YES
3278	017276	005237	003446			INC	BITCNT	:COUNT UP
3279	017302	001401				BEQ	UPETRE	:BIT IS NOT GOING TO SET
3280	017304	000770				BR	19\$	
3281	017306							
3282	017306	017737	164016	001162		MOV	RHCS1, \$REGO	:SET UP NEEDED BITS ONLY
3283	017314	042737	027777	001162		BIC	#GO! IE! RDY! A16! A17! PSEL! DVA! MCPE! READ6, \$REGO	
3284	017322	042777	100000	164032		BIC	#APE, RHCS3	
3285								:CLEAR BITS NOT NEEDED
3286	017330	017737	163774	003420		MOV	RHCS1, CS1	:SAVE RHCS1
3287	017336	017737	163770	003444		MOV	RHWC, WC	:SAVE WORD COUNT
3288	017344	017737	163764	003414		MOV	RHBA, BA	:SAVE BUS ADDRESS
3289	017352	005701				TST	R1	:IS IT AN RH11
3290	017354	001406				BEQ	87\$	:NO IT'S A 70
3291	017356	005037	003416			CLR	BAE	:CLEAR BAE
3292	017362	005037	003424			CLR	CS3	:CLEAR CS3
3293	017366	000137	017406			JMP	86\$	:CONTINUE
3294	017372	017737	163762	003416	87\$:	MOV	RHBAE, BAE	:SAVE BUS ADDRESS EXTENSION
3295	017400	017737	163756	003424		MOV	RHCS3, CS3	:SAVE RHCS3
3296	017406	017737	163726	003422	86\$:	MOV	RHCS2, CS2	:SAVE CS2
3297	017414	017737	163722	003432		MOV	RHST, DS1	:SAVE TESTER STATUS
3298	017422	017737	163716	003436		MOV	RHER, ER1	:SAVE ERROR REGISTER
3299	017430	017737	163714	003442		MOV	RHTDB, TDR	:SAVE TESTER DATA REG.
3300	017436	017737	163674	003440		MOV	RHMR2, TC	:SAVE MR2 TESTER REG.
3301	017444	032777	000200	163656		BIT	#RDY, RHCS1	:IS READY SET
3302	017452	001003				BNE	99\$	:YES CONTINUE TEST
3303	017454	104102				ERROR	102	:READY NOT SET
3304	017456	004737	007234			JSR	R7, WHYFO	:ANY ERRORS SET
3305	017462	032777	000400	163650	99\$:	BIT	#MPE, RHCS2	:IS MPE SET
3306	017470	001016				BNE	1\$	:YES CHECK TRE AND SC
3307	017472	022737	140000	001162		CMP	#SC! TRE, \$REGO	:IS THE SC AND TRE BITS SET
3308	017500	001460				BEQ	2\$	:YES MPE IS IN ERROR
3309	017502	032737	040000	001162		BIT	#TRE, \$REGO	:IS JUST THE TRE BIT SET
3310	017510	001060				BNE	3\$	:TRE BIT MUST BE IN ERROR
3311	017512	032737	100000	001162		BIT	#SC, \$REGO	:IS JUST THE SC BIT SET
3312	017520	001060				BNE	4\$	:SC BIT SET ERRONIOUSLY
3313	017522	104116				ERROR	116	:MPE NOT SET IN RHCS2
3314	017524	000467				BR	8\$	:SET UP TO TEST AGAIN
3315	017526	022737	140000	001162	1\$:	CMP	#SC! TRE, \$REGO	:IS SC AND TRE SET
3316	017534	001030				BNE	22\$	:FIND THE ERROR

N05

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 66
 DZRHBC.P11 T22 MDPE ,TRE AND SC BIT TEST

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3317 017536 013737 004124 004124      MOV      $CS1,$CS1      ;TEST FOR SHORTS
3318 017544 012737 177000 004126      MOV      #MXF!PGE!NEM!NED!UPE!WCE!DLT,$CS2
3319 017552 012737 174000 004130      MOV      #WCELO!WCEHI!DPELO!DPEHI!APE,$CS3
3320 017560 013737 004132 004132      MOV      $ST,$ST
3321 017566 013737 004134 004134      MOV      $ER,$ER
3322 017574 012737 177777 004122      MOV      #1,BEFORE
3323 017602 004737 007234      JSR      R7,WHYFO
3324 017606 005037 004122      CLR      BEFORE
3325 017612 000137 017704      JMP      BS
3326 017616 032737 040000 001162 22$:  BIT      #TRE,$REGO
3327 017624 001022      BNE      BS
3328 017626 032737 100000 001162      BIT      #SC,$REGO
3329 017634 001022      BNE      BS
3330 017636 104006      ERROR    6
3331 017640 000421      BR       BS
3332 017642 104120      ERROR    120
3333 017644 004737 007234      JSR      R7,WHYFO
3334
3335 017650 000415      BR       BS
3336 017652 104121      ERROR    121
3337 017654 004737 007234      JSR      R7,WHYFO
3338
3339
3340 017660 000411      BR       BS
3341 017662 104011      ERROR    11
3342 017664 004737 007234      JSR      R7,WHYFO
3343
3344 017670 000405      BR       BS
3345 017672 104122      ERROR    122
3346 017674 004737 007234      JSR      R7,WHYFO
3347 017700 000401      BR       BS
3348 017702 104013      ERROR    13
3349 017704 032737 041400 177570 8$:  BIT      #SW14!SW9!SW8,#177570
3350 017712 001003      BNE      21$
3351 017714 105737 001103      TSTB     $ERFLG
3352 017720 001010      BNE      9$
3353 017722 112777 000100 163434 21$:  MOVB     #TREB,$RHCS1B
3354 017730 032777 000400 163402      BIT      #MPE,$RHCS2
3355 017736 001401      BEQ      9$
3356 017740 104050      ERROR    50
3357 017742 004737 006602 9$:  JSR      R7,CLEER
3358 017746 004737 050130      JSR      R7,ERRTST
3359
3360
3361
3362
3363
3364
3365
3366 017752 000004      ;*****
3367
3368 017754 012777 000007 163356      ;*TEST 23      UPE,TRE,SC ERROR TEST (RH11)
3369 017762 005701      ;*THIS TEST CHECKS THE UPE BIT IN RHCS2
3370 017764 100402      ;*TO SEE IF IT SETS AND WHEN IT SETS IS
3371 017766 000137 020444      ;*TRE AND SC BITS SET IN RHCS1.....
3372 017772 012777 020007 163340      ;*****
FITIT: MOV      #7,$RHCS2      ;SET UP UNIT 7
      TST      R1              ;IS IT AN RH11
      BMI      FITIT           ;IT'S AN RH11,DO THE TEST
      JMP      FIT            ;IT'S AN RH70, EXIT TEST
      MOV      #UPE!7,$RHCS2  ;SET PARITY ERROR IN RH11'S CS2 REG

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3373	020000	017737	163324	001162		MOV	DRHCS1,\$REGO	:SET UP NEEDED BITS ONLY
3374	020006	042737	027777	001162		BIC	#GO!!E!RDY!A16!A17!PSEL!DVA!MCPE!READ6,\$REGO	
3375	020014	042777	100000	163340		BIC	#APE,DRHCS3	
3376								:CLEAR BITS NOT NEEDED
3377	020022	017737	163302	003420		MOV	DRHCS1,CS1	:SAVE RHCS1
3378	020030	017737	163276	003444		MOV	DRHWC,WC	:SAVE WORD COUNT
3379	020036	017737	163272	003414		MOV	DRHBA,BA	:SAVE BUS ADDRESS
3380	020044	005701				TST	R1	:IS IT AN RH11
3381	020046	001406				BEQ	87\$	:NO IT'S A 70
3382	020050	005037	003416			CLR	BAE	:CLEAR BAE
3383	020054	005037	003424			CLR	CS3	:CLEAR CS3
3384	020060	000137	020100			JMP	86\$	:CONTINUE
3385	020064	017737	163270	003416	87\$:	MOV	DRHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
3386	020072	017737	163264	003424		MOV	DRHCS3,CS3	:SAVE RHCS3
3387	020100	017737	163234	003422	86\$:	MOV	DRHCS2,CS2	:SAVE CS2
3388	020106	017737	163230	003432		MOV	DRHST,DS1	:SAVE TESTER STATUS
3389	020114	017737	163224	003436		MOV	DRHER,ER1	:SAVE ERROR REGISTER
3390	020122	017737	163222	003442		MOV	DRHTD8,TDR	:SAVE TESTER DATA REG.
3391	020130	017737	163202	003440		MOV	DRHMR2,TC	:SAVE MR2 TESTER REG.
3392	020136	032777	000200	163164		BIT	#RDY,DRHCS1	:IS READY SET
3393	020144	001003				BNE	99\$	:YES CONTINUE TEST
3394	020146	104102				ERROR	102	:READY NOT SET
3395	020150	004737	007234			JSR	R7,WHYFO	:ANY ERRORS SET
3396	020154	032777	020000	163156	99\$:	BIT	#UPE,DRHCS2	:IS UPE SET
3397	020162	001016				BNE	1\$	:YES CHECK TRE AND SC
3398	020164	022737	140000	001162		CMP	#SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET
3399	020172	001460				BEQ	2\$	:YES UPE IS IN ERROR
3400	020174	032737	040000	001162		BIT	#TRE,\$REGO	:IS JUST THE TRE BIT SET
3401	020202	001060				BNE	3\$	:TRE BIT MUST BE IN ERROR
3402	020204	032737	100000	001162		BIT	#SC,\$REGO	:IS JUST THE SC BIT SET
3403	020212	001060				BNE	4\$	:SC BIT SET ERRONIOUSLY
3404	020214	104020				ERROR	20	:UPE NOT SET IN RHCS2
3405	020216	000467				BR	8\$	:SET UP TO TEST AGAIN
3406	020220	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO	:IS SC AND TRE SET
3407	020226	001030				BNE	22\$	:FIND THE ERROR
3408	020230	013737	004124	004124		MOV	SCS1,\$CS1	:TEST FOR SHORTS
3409	020236	012737	157400	004126		MOV	#MPE!MXF!PGE!NEM!NED!WCE!DLT,\$CS2	
3410	020244	013737	004130	004130		MOV	SCS3,\$CS3	
3411	020252	013737	004132	004132		MOV	\$ST,\$ST	
3412	020260	013737	004134	004134		MOV	\$ER,\$ER	
3413	020266	012737	177777	004122		MOV	#-1,BEFORE	:TELL WHYFO ITS FOR SHORTS
3414	020274	004737	007234			JSR	R7,WHYFO	:TEST FOR SHORTS
3415	020300	005037	004122			CLR	BEFORE	:WE HAVE CHECKED FOR SHORTS
3416	020304	000137	020376			JMP	8\$	:LEAVE THE TEST
3417	020310	032737	040000	001162	22\$:	BIT	#TRE,\$REGO	:THEN IS THE TRE BIT SET
3418	020316	001022				BNE	6\$	:SC BIT DID NOT SEE TRE BIT
3419	020320	032737	100000	001162		BIT	#SC,\$REGO	:IS THE SC BIT SET
3420	020326	001022				BNE	7\$	:TRE HAS AN OPEN GOING TO BUS
3421	020330	104005				ERROR	6	:TRE SET LOGIC NOT WORKING
3422	020332	000421				BR	8\$	:SET UP TO TEST AGAIN
3423	020334	104021			2\$:	ERROR	21	:UPE HAS OPEN IN LINE GOING TO BUS
3424	020336	004737	007234			JSR	R7,WHYFO	:SEE IF ANY OTHER ERROR BIT IS
3425								:SET OTHER THAN UPE
3426	020342	000415				BR	8\$	:SET UP TO TEST AGAIN
3427	020344	104023			3\$:	ERROR	23	:SOMTHING WRONG WITH TRE BIT
3428	020346	004737	007234			JSR	R7,WHYFO	:SEE IF AN ERROR BIT IS SET

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3430
3431 020352 000411
3432 020354 104011
3433 020356 004737 007234
3434
3435 020362 000405
3436 020364 104022
3437 020366 004737 007234
3438 020372 000401
3439 020374 104013
3440 020376 032737 041400 177570
3441 020404 001003
3442 020406 105737 001103
3443 020412 001010
3444 020414 112777 000100 162742
3445 020422 032777 020000 162710
3446 020430 001401
3447 020432 104050
3448 020434 004737 006602
3449 020440 004737 050130
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3451 020444
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3458 020444 000004
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3460 020446 012777 000007 162664
3461 020454 005701
3462 020456 001402
3463 020460 000137 021234
3464 020464 012777 000004 162670
3465 020472 012777 177776 162632
3466 020500 012777 000000 162652
3467 020506 012777 001162 162620
3468 020514 012777 000061 162606
3469 020522 005037 003446
3470 020526 032777 000200 162574
3471 020534 001015
3472 020536 005237 003446
3473 020542 001371
3474 020544 005037 003446
3475 020550 032777 000200 162552
3476 020556 001004
3477 020560 005237 003446
3478 020564 001401
3479 020566 000770
3480 020570
3481 020570 017737 162534 001162
3482 020576 042737 027777 001162
3483 020604 042777 100000 162550
3484

;OR BOTH UPE IN RHCS2 AND SC IN
;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
;SET UP TO TEST AGAIN
;SC BIT WAS SET BY EITHER ATTN OR
;FIND WHAT ERROR BIT IS SET
;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
;SETUP TO TEST AGAIN
;TRE WAS SET BY OTHER THAN UPE
;FIND ERROR BIT THAT SET TRE
;SETUP TO TEST AGAIN
;TRE HAS AN OPEN GOING TO THE BUS
;ANY LOOPING BEING DONE
;YES, LOAD TRE NO MATTER WHAT
;WAS THERE AN ERROR
;SKIP TRE CHECK
;LOAD TRE
;DID ERROR CLEAR
;YES EXIT TEST
;LOADING TRE DID NOT CLEAR ERROR
;SEE IF ERRORS ARE CLEARED

FIT:
;*****
;TEST 24 UPE,TRE,SC ERROR TEST (RH70)
;THIS TEST CHECKS THE UPE BIT IN RHCS2
;TO SEE IF IT SETS AND WHEN IT SETS IS
;TRE AND SC BITS SET IN RHCS1.....
;*****
TST24: SCOPE

MOV #7,ARHCS2 ;SETUP UNIT 7
TST R1 ;IS IT AN RH11
BEQ PLACE ;IT'S AN RH70
JMP FANGIE ;IT'S AN RH11, EXIT TEST
PLACE: MOV #IPCK2,ARHCS3 ;SETUP FOR PARITY ERROR
MOV #-2,ARHWC ;SETUP WORD COUNT TO TWO WORDS
MOV #ZERO,ARHBAE ;SETUP BAE
MOV #SREG0,ARHBA ;SETUP ADDRESS
MOV #WRITED,ARHCS1 ;TELL IT TO WRITE
CLR BITCNT ;CLEAR BIT COUNTER
BIT #RDY,ARHCS1 ;IS RDY SET
BNE DYN0 ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
BIT #RDY,ARHCS1 ;IS IT SET YET?
BNE DYN0 ;YES
INC BITCNT ;COUNT UP
BEQ DYN0 ;BIT IS NOT GOING TO SET
BR 19$

DYN0: MOV ARHCS1,SREG0 ;SET UP NEEDED BITS ONLY
BIC #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,SREG0
BIC #APE,ARHCS3 ;CLEAR BITS NOT NEEDED

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3485	020612	017737	162512	003420		MOV	2RHCS1,CS1	:SAVE RHCS1
3486	020620	017737	162506	003444		MOV	2RHWC,WC	:SAVE WORD COUNT
3487	020626	017737	162502	003414		MOV	2RHBA,BA	:SAVE BUS ADDRESS
3488	020634	005701				TST	R1	:IS IT AN RH11
3489	020636	001406				SEQ	87\$	:NO IT'S A 70
3490	020640	005037	003416			CLR	BAE	:CLEAR BAE
3491	020644	005037	003424			CLR	CS3	:CLEAR CS3
3492	020650	000137	020670			JMP	86\$	:CONTINUE
3493	020654	017737	162500	003416	87\$:	MOV	2RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
3494	020662	017737	162474	003424		MOV	2RHCS3,CS3	:SAVE RHCS3
3495	020670	017737	162444	003422	86\$:	MOV	2RHCS2,CS2	:SAVE CS2
3496	020676	017737	162440	003432		MOV	2RHST,DS1	:SAVE TESTER STATUS
3497	020704	017737	162434	003436		MOV	2RHER,ER1	:SAVE ERROR REGISTER
3498	020712	017737	162432	003442		MOV	2RHTDB,TDR	:SAVE TESTER DATA REG.
3499	020720	017737	162412	003440		MOV	2RHMR2,TC	:SAVE MR2 TESTER REG.
3500	020726	032777	000200	162374		BIT	8RDY,2RHCS1	:IS READY SET
3501	020734	001003				BNE	99\$	:YES CONTINUE TEST
3502	020736	104102				ERROR	102	:READY NOT SET
3503	020740	004737	007234			JSR	R7,WHYFO	:ANY ERRORS SET
3504	020744	032777	020000	162366	99\$:	BIT	8UPE,2RHCS2	:IS UPE SET
3505	020752	001016				BNE	1\$	:YES CHECK TRE AND SC
3506	020754	022737	140000	001162		CMP	8SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET
3507	020762	001460				BEQ	2\$	:YES UPE IS IN ERROR
3508	020764	032737	040000	001162		BIT	8TRE,\$REGO	:IS JUST THE TRE BIT SET
3509	020772	001060				BNE	3\$	:TRE BIT MUST BE IN ERROR
3510	020774	032737	100000	001162		BIT	8SC,\$REGO	:IS JUST THE SC BIT SET
3511	021002	001060				BNE	4\$	:SC BIT SET ERRONIOUSLY
3512	021004	104020				ERROR	20	:UPE NOT SET IN RHCS2
3513	021006	000467				BR	8\$	:SET UP TO TEST AGAIN
3514	021010	022737	140000	001162	1\$:	CMP	8SC!TRE,\$REGO	:IS SC AND TRE SET
3515	021016	001030				BNE	22\$	:FIND THE ERROR
3516	021020	013737	004124	004124		MOV	8CS1,\$CS1	:TEST FOR SHORTS
3517	021026	012737	157400	004126		MOV	8MPE!MXF!PGE!NEM!NED!WCE!DLT,\$CS2	
3518	021034	012737	134100	004130		MOV	8APE!DPELO!WCEHI!WCELO!IE3,\$CS3	
3519	021042	013737	004132	004132		MOV	8ST,\$ST	
3520	021050	013737	004134	004134		MOV	8ER,\$ER	
3521	021056	012737	177777	004122		MOV	8-1,BEFORE	
3522	021064	004737	007234			JSR	R7,WHYFO	:TELL WHYFO ITS FOR SHORTS
3523	021070	005037	004122			CLR	BEFORE	:TEST FOR SHORTS
3524	021074	000137	021166			JMP	8\$	:WE HAVE CHECKED FOR SHORTS
3525	021100	032737	040000	001162	22\$:	BIT	8TRE,\$REGO	:LEAVE THE TEST
3526	021106	001022				BNE	6\$	:THEN IS THE TRE BIT SET
3527	021110	032737	100000	001162		BIT	8SC,\$REGO	:SC BIT DID NOT SEE TRE BIT
3528	021116	001022				BNE	7\$	:IS THE SC BIT SET
3529	021120	104006				ERROR	6	:TRE HAS AN OPEN GOING TO BUS
3530	021122	000421				BR	8\$	:TRE SET LOGIC NOT WORKING
3531	021124	104021			2\$:	ERROR	21	:SET UP TO TEST AGAIN
3532	021126	004737	007234			JSR	R7,WHYFO	:UPE HAS OPEN IN LINE GOING TO BUS
3533								:SEE IF ANY OTHER ERROR BIT IS
3534	021132	000415				BR	8\$	:SET OTHER THAN UPE
3535	021134	104023			3\$:	ERROR	23	:SET UP TO TEST AGAIN
3536	021136	004737	007234			JSR	R7,WHYFO	:SOMTHING WRONG WITH TRE BIT
3537								:SEE IF AN ERROR BIT IS SET
3538								:OR BOTH UPE IN RHCS2 AND SC IN
3539	021142	000411				BR	8\$	:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3540	021144	104011			4\$:	ERROR	11	:SET UP TO TEST AGAIN
								:SC BIT WAS SET BY EITHER ATTN OR

E06

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRH8C.P11

T24

UPE, TRE, SC ERROR TEST (RH70)

MACY11 27(732)

01-OCT-76 09:03 PAGE 70

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3541 021146 004737 007234 JSR R7,WHYFO ;FIND WHAT ERROR BIT IS SET
3542 ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3543 021152 000405 BR 8$ ;SETUP TO TEST AGAIN
3544 021154 104022 6$: ERROR 22 ;TRE WAS SET BY OTHER THAN UPE
3545 021156 004737 007234 JSR R7,WHYFO ;FIND ERROR BIT THAT SET TRE
3546 021162 000401 BR 8$ ;SETUP TO TEST AGAIN
3547 021164 104013 7$: ERROR 13 ;TRE HAS AN OPEN GOING TO THE BUS
3548 021166 032737 041400 177570 8$: BIT #SW14!SW9!SW8,2#177570 ;ANY LOOPING BEEING DONE
3549 021174 001003 BNE 21$ ;YES,LOAD TRE NO MATTER WHAT
3550 021176 105737 001103 TSTB SERFLG ;WAS THERE AN ERROR
3551 021202 001010 BNE 9$ ;SKIP TRE CHECK
3552 021204 112777 000100 162152 21$: MOVB #TREB,2RHCS1B ;LOAD TRE
3553 021212 032777 020000 162120 BIT #UPE,2RHCS2 ;DID ERROR CLEAR
3554 021220 001401 BEQ 9$ ;YES EXIT TEST
3555 021222 104050 ERROR 50 ;LOADING TRE DID NOT CLEAR ERROR
3556 021224 004737 006602 9$: JSR R7,CLEER ;SEE IF ERRORS ARE CLEARED
3557 021230 004737 050130 JSR R7,ERRTST
3558
3559 021234 FANGIE:
3560
3561 ;*****
3562 ;*TEST 25 NED BIT TEST
3563 ;*THIS TEST WILL CHECK THAT NED (NON-EXISTANT DRIVE)
3564 ;*SETS TRE AND SC BITS IN RHCS1.....
3565 ;*****
3566 021234 000004 †ST25: SCOPE
3567
3568 021236 012777 000000 162074 MOV #ZERO,2RHCS2 ;SETUP NED
3569 021244 005701 TST R1 ;RH11 OR RH70
3570 021246 100403 BMI NEDERR ;IT'S AN RH11
3571 021250 012777 000000 162102 MOV #ZERO,2RHBAE ;SETUP BA EXTENSION
3572 021256 012777 177777 162046 NEDERR: MOV #-1,2RHWC ;FOR A 1 WORD TRANSFER
3573 021264 012777 001172 162042 MOV #SREG4,2RHBA ;SETUP BA
3574 021272 012777 000061 162030 MOV #WRITED,2RHCS1 ;TELL IT TO WRITE
3575 021300 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
3576 021304 032777 000200 162016 18$: BIT #RDY,2RHCS1 ;IS RDY SET
3577 021312 001015 BNE BAKER ;BIT IS SET
3578 021314 005237 003446 INC BITCNT ;COUNT UP
3579 021320 001371 BNE 18$ ;NOT FINISHED COUNTING
3580 021322 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
3581 021326 032777 000200 161774 19$: BIT #RDY,2RHCS1 ;IS IT SET YET?
3582 021334 001004 BNE BAKER ;YES
3583 021336 005237 003446 INC BITCNT ;COUNT UP
3584 021342 001401 BEQ BAKER ;BIT IS NOT GOING TO SET
3585 021344 000770 BR 19$
3586
3587 021346 017737 161756 001162 BAKER: MOV 2RHCS1,SREG0 ;SET UP NEEDED BITS ONLY
3588 021354 042737 027777 001162 BIC #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,SREG0
3589 021362 042777 100000 161772 BIC #APE,2RHCS3
3590
3591 021370 017737 161734 003420 MOV 2RHCS1,CS1 ;CLEAR BITS NOT NEEDED
3592 021376 017737 161730 003444 MOV 2RHWC,WC ;SAVE RHCS1
3593 021404 017737 161724 003414 MOV 2RHBA,BA ;SAVE WORD COUNT
3594 021412 005701 TST R1 ;SAVE BUS ADDRESS
3595 021414 001406 BEQ 87$ ;IS IT AN RH11
3596 021416 005037 003416 CLR BAE ;NO IT'S A 70
;CLEAR BAE

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3597	021422	005037	003424		CLR	CS3	:CLEAR CS3
3598	021426	000137	021446		JMP	86\$	:CONTINUE
3599	021432	017737	161722	003416	87\$: MOV	2RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
3600	021440	017737	161716	003424	MOV	2RHCS3,CS3	:SAVE RHCS3
3601	021446	017737	161666	003422	86\$: MOV	2RHCS2,CS2	:SAVE CS2
3602	021454	017737	161662	003432	MOV	2RHST,DS1	:SAVE TESTER STATUS
3603	021462	017737	161656	003436	MOV	2RHER,ER1	:SAVE ERROR REGISTER
3604	021470	017737	161654	003442	MOV	2RHTRD,TDR	:SAVE TESTER DATA REG.
3605	021476	017737	161634	003440	MOV	2RHMR2,TC	:SAVE MR2 TESTER REG.
3606	021504	032777	000200	161616	BIT	8RDY,2RHCS1	:IS READY SET
3607	021512	001003			BNE	99\$	:YES CONTINUE TEST
3608	021514	104102			ERROR	102	:READY NOT SET
3609	021516	004737	007234		JSR	R7,WHYFO	:ANY ERRORS SET
3610	021522	032777	010000	161610	99\$: BIT	8NED,2RHCS2	:IS NED SET
3611	021530	001016			BNE	1\$	:YES CHECK TRE AND SC
3612	021532	022737	140000	001162	CMP	8SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET
3613	021540	001460			BEQ	2\$	:YES NED IS IN ERROR
3614	021542	032737	040000	001162	BIT	8TRE,\$REGO	:IS JUST THE TRE BIT SET
3615	021550	001060			BNE	3\$	:TRE BIT MUST BE IN ERROR
3616	021552	032737	100000	001162	BIT	8SC,\$REGO	:IS JUST THE SC BIT SET
3617	021560	001060			BNE	4\$	:SC BIT SET ERRONIOUSLY
3618	021562	104024			ERROR	24	:NED NOT SET IN RHCS2
3619	021564	000467			BR	8\$	:SET UP TO TEST AGAIN
3620	021566	022737	140000	001162	1\$: CMP	8SC!TRE,\$REGO	:IS SC AND TRE SET
3621	021574	001030			BNE	22\$	:FIND THE ERROR
3622	021576	012737	000000	004124	MOV	8ZERO,\$CS1	:TEST FOR SHORTS
3623	021604	012737	167400	004126	MOV	8MPE!MXF!PGE!NEM!UPE!WCE!DLT,\$CS2	
3624	021612	012737	174100	004130	MOV	8APE!DPEHI!DPELO!WCEHI!WCELO!IE3,\$CS3	
3625	021620	013737	004132	004132	MOV	8ST,\$ST	
3626	021626	013737	004134	004134	MOV	8ER,\$ER	
3627	021634	012737	177777	004122	MOV	8-1,BEFORE	:TELL WHYFO ITS FOR SHORTS
3628	021642	004737	007234		JSR	R7,WHYFO	:TEST FOR SHORTS
3629	021646	005037	004122		CLR	BEFORE	:WE HAVE CHECKED FOR SHORTS
3630	021652	000137	021744		JMP	8\$	:LEAVE THE TEST
3631	021656	032737	040000	001162	22\$: BIT	8TRE,\$REGO	:THEN IS THE TRE BIT SET
3632	021664	001022			BNE	6\$	:SC BIT DID NOT SEE TRE BIT
3633	021666	032737	100000	001162	BIT	8SC,\$REGO	:IS THE SC BIT SET
3634	021674	001022			BNE	7\$	:TRE HAS AN OPEN GOING TO BUS
3635	021676	104006			ERROR	6	:TRE SET LOGIC NOT WORKING
3636	021700	000421			BR	8\$	:SET UP TO TEST AGAIN
3637	021702	104025			2\$: ERROR	25	:NED HAS OPEN IN LINE GOING TO BUS
3638	021704	004737	007234		JSR	R7,WHYFO	:SEE IF ANY OTHER ERROR BIT IS
3639							:SET OTHER THAN NED
3640	021710	000415			BR	8\$	:SET UP TO TEST AGAIN
3641	021712	104026			3\$: ERROR	26	:SOMTHING WRONG WITH TRE BIT
3642	021714	004737	007234		JSR	R7,WHYFO	:SEE IF AN ERROR BIT IS SET
3643							:OR BOTH NED IN RHCS2 AND SC IN
3644							:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3645	021720	000411			BR	8\$	:SET UP TO TEST AGAIN
3646	021722	104011			4\$: ERROR	11	:SC BIT WAS SET BY EITHER ATTN OR
3647	021724	004737	007234		JSR	R7,WHYFO	:FIND WHAT ERROR BIT IS SET
3648							:MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3649	021730	000405			BR	8\$	:SETUP TO TEST AGAIN
3650	021732	104027			6\$: ERROR	27	:TRE WAS SET BY OTHER THAN NED
3651	021734	004737	007234		JSR	R7,WHYFO	:FIND ERROR BIT THAT SET TRE
3652	021740	000401			BR	8\$	:SETUP TO TEST AGAIN

3653	021742	104013		75:	ERROR	13		;TRE HAS AN OPEN GOING TO THE BUS
3654	021744	032737	041400	85:	BIT	#SW14!SW9!SW8.2#177570		;ANY LOOPING BEING DONE
3655	021752	001003			BNE	215		;YES, LOAD TRE NO MATTER WHAT
3656	021754	105737	001103		TSTB	\$ERFLG		;WAS THERE AN ERROR
3657	021760	001010			BNE	95		;SKIP TRE CHECK
3658	021762	112777	000100	215:	MOVB	#TREB, JRHCS1B		;LOAD TRE
3659	021770	032777	010000		BIT	#NED, JRHCS2		;DID ERROR CLEAR
3660	021776	001401			BEQ	95		;YES EXIT TEST
3661	022000	104050			ERROR	50		;LOADING TRE DID NOT CLEAR ERROR
3662	022002	004737	006602	95:	JSR	R7, CLEER		;SEE IF ERRORS ARE CLEARED
3663	022006	004737	050130		JSR	R7, ERRST		

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*****
;TEST 26      MXF, TRE AND SC BIT TEST
;THIS TEST WILL CHECK THAT MXF
;*(MISSED TRANSFER ERROR) WILL
;SET TRE AND SC BITS.....
*****

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*****
;TST26: SCOPE

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3672	022012	000004						
3673								
3674	022014	012777	000027	161316	MOV	#PAT!7, JRHCS2		;SET MXF BIT
3675	022022	012777	177777	161302	MOV	#-1, JRHWC		;SET UP WORD COUNT
3676	022030	012777	004100	161276	MOV	#RBUF, JRHBA		;SETUP BA
3677	022036	012777	000000	161304	MOV	#ZERO, JRHTDB		;SET MXF ERROR
3678	022044	012777	000061	161256	MOV	#WRITED, JRHCS1		;TELL IT TO WRITE
3679	022052	005037	003446		CLR	BITCNT		;CLEAR BIT COUNTER
3680	022056	032777	000200	161244	185:	BIT	#RDY, JRHCS1	;IS RDY SET
3681	022064	001015			BNE	CHARLE		;BIT IS SET
3682	022066	005237	003446		INC	BITCNT		;COUNT UP
3683	022072	001371			BNE	185		;NOT FINISHED COUNTING
3684	022074	005037	003446		CLR	BITCNT		;GET READY TO DO IT AGAIN
3685	022100	032777	000200	161222	195:	BIT	#RDY, JRHCS1	;IS IT SET YET?
3686	022106	001004			BNE	CHARLE		;YES
3687	022110	005237	003446		INC	BITCNT		;COUNT UP
3688	022114	001401			BEQ	CHARLE		;BIT IS NOT GOING TO SET
3689	022116	000770			BR	195		
3690	022120							
3691	022120	017737	161204	001162	CHARLE:	MOV	JRHCS1, \$REGO	;SET UP NEEDED BITS ONLY
3692	022126	042737	027777	001162		BIC	#GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6, \$REGO	
3693	022134	042777	100000	161220		BIC	#APE, JRHCS3	
3694								;CLEAR BITS NOT NEEDED
3695	022142	017737	161162	003420		MOV	JRHCS1, CS1	;SAVE RHCS1
3696	022150	017737	161156	003444		MOV	JRHWC, WC	;SAVE WORD COUNT
3697	022156	017737	161152	003414		MOV	JRHBA, BA	;SAVE BUS ADDRESS
3698	022164	005701				TST	R1	;IS IT AN RH11
3699	022166	001406				BEQ	875	;NO IT'S A 70
3700	022170	005037	003416			CLR	BAE	;CLEAR BAE
3701	022174	005037	003424			CLR	CS3	;CLEAR CS3
3702	022200	000137	022220			JMP	865	;CONTINUE
3703	022204	017737	161150	003416	875:	MOV	JRHBAE, BAE	;SAVE BUS ADDRESS EXTENSION
3704	022212	017737	161144	003424		MOV	JRHCS3, CS3	;SAVE RHCS3
3705	022220	017737	161114	003422	865:	MOV	JRHCS2, CS2	;SAVE CS2
3706	022226	017737	161110	003432		MOV	JRHST, DS1	;SAVE TESTER STATUS
3707	022234	017737	161104	003436		MOV	JRHER, ER1	;SAVE ERROR REGISTER
3708	022242	017737	161102	003442		MOV	JRHTEB, TDR	;SAVE TESTER DATA REG.

3709	022250	017737	161062	003440		MOV	DRHMR2,TC	:SAVE MR2 TESTER REG.
3710	022256	032777	000200	161044		BIT	#RDY,DRHCS1	:IS READY SET
3711	022264	001003				BNE	99\$	:YES CONTINUE TEST
3712	022266	104102				ERROR	102	:READY NOT SET
3713	022270	004737	007234			JSR	R7,WHYFO	:ANY ERRORS SET
3714	022274	032777	001000	161036	99\$:	BIT	#MXF,DRHCS2	:IS MXF SET
3715	022302	001016				BNE	1\$	:YES CHECK TRE AND SC
3716	022304	022737	140000	001162		CMP	#SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET
3717	022312	001460				BEQ	2\$	:YES MXF IS IN ERROR
3718	022314	032737	040000	001162		BIT	#TRE,\$REGO	:IS JUST THE TRE BIT SET
3719	022322	001060				BNE	3\$	:TRE BIT MUST BE IN ERROR
3720	022324	032737	100000	001162		BIT	#SC,\$REGO	:IS JUST THE SC BIT SET
3721	022332	001060				BNE	4\$	:SC BIT SET ERRONIOUSLY
3722	022334	104030				ERROR	30	:MXF NOT SET IN RHCS2
3723	022336	000467				BR	8\$	:SET UP TO TEST AGAIN
3724	022340	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO	:IS SC AND TRE SET
3725	022346	001030				BNE	22\$	:FIND THE ERROR
3726	022350	012737	020000	004124		MOV	#MCPE,\$CS1	:TEST FOR SHORTS
3727	022356	012737	176400	004126		MOV	#MPE!PGE!NEM!NED!UPE!WCE!DLT,\$CS2	
3728	022364	013737	004130	004130		MOV	\$CS3,\$CS3	
3729	022372	013737	004132	004132		MOV	\$ST,\$ST	
3730	022400	012737	030165	004134		MOV	#ILF!RMR!DPE!RMBEX!RFAIL!DTE!OPI,\$ER	
3731	022406	012737	177777	004122		MOV	#-1,BEFORE	:TELL WHYFO ITS FOR SHORTS
3732	022414	004737	007234			JSR	R7,WHYFO	:TEST FOR SHORTS
3733	022420	005037	004122			CLR	BEFORE	:WE HAVE CHECKED FOR SHORTS
3734	022424	000137	022516			JMP	8\$	:LEAVE THE TEST
3735	022430	032737	040000	001162	22\$:	BIT	#TRE,\$REGO	:THEN IS THE TRE BIT SET
3736	022436	001022				BNE	6\$	:SC BIT DID NOT SEE TRE BIT
3737	022440	032737	100000	001162		BIT	#SC,\$REGO	:IS THE SC BIT SET
3738	022446	001022				BNE	7\$	:TRE HAS AN OPEN GOING TO BUS
3739	022450	104006				ERROR	6	:TRE SET LOGIC NOT WORKING
3740	022452	000421				BR	8\$	:SET UP TO TEST AGAIN
3741	022454	104031			2\$:	ERROR	31	:MXF HAS OPEN IN LINE GOING TO BUS
3742	022456	004737	007234			JSR	R7,WHYFO	:SEE IF ANY OTHER ERROR BIT IS
3743								:SET OTHER THAN MXF
3744	022462	000415				BR	8\$	:SET UP TO TEST AGAIN
3745	022464	104032			3\$:	ERROR	32	:SOMTHING WRONG WITH TRE BIT
3746	022466	004737	007234			JSR	R7,WHYFO	:SEE IF AN ERROR BIT IS SET
3747								:OR BOTH MXF IN RHCS2 AND SC IN
3748								:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3749	022472	000411				BR	8\$	:SET UP TO TEST AGAIN
3750	022474	104011			4\$:	ERROR	11	:SC BIT WAS SET BY EITHER ATTN OR
3751	022476	004737	007234			JSR	R7,WHYFO	:FIND WHAT ERROR BIT IS SET
3752								:MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3753	022502	000405				BR	8\$	:SETUP TO TEST AGAIN
3754	022504	104033			6\$:	ERROR	33	:TRE WAS SET BY OTHER THAN MXF
3755	022506	004737	007234			JSR	R7,WHYFO	:FIND ERROR BIT THAT SET TRE
3756	022512	000401				BR	8\$	:SETUP TO TEST AGAIN
3757	022514	104013			7\$:	ERROR	13	:TRE HAS AN OPEN GOING TO THE BUS
3758	022516	032737	041400	177570	8\$:	BIT	#SW14!SW9!SW8,DR177570	:ANY LOOPING BEEING DONE
3759	022524	001003				BNE	21\$	:YES,LOAD TRE NO MATTER WHAT
3760	022526	105737	001103			TSTB	SEFLG	:WAS THERE AN ERROR
3761	022532	001010				BNE	9\$	:SKIP TRE CHECK
3762	022534	112777	000100	160622	21\$:	MOVB	#TREB,DRHCS1B	:LOAD TRE
3763	022542	032777	001000	160570		BIT	#MXF,DRHCS2	:DID ERROR CLEAR
3764	022550	001401				BEQ	9\$	:YES EXIT TEST

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3765 022552 104050          ERROR 50          ;LOADING TRE DID NOT CLEAR ERROR
3766 022554 004737 006602 95:   JSR      R7,CLEER          ;SEE IF ERRORS ARE CLEARED
3767 022560 004737 050130          JSR      R7,ERRTST
3768                                     ;*****
3769 ;*TEST 27      PGE ERROR BIT TEST
3770 ;*THIS TEST FORCES PGE TO SET IN RHCS2
3771 ;*AND VERIFYS TRE AND SC IS SET IN RHCS1
3772                                     ;*****
3773 022564 000004          tst27: SCOPE
3774 022566 012777 000007 160544      MOV      #7,RHCS2          ;SET UNIT NUMBER
3775 022574 012777 004000 160532      MOV      #EVENAD,RHBA      ;SETUP BUS ADDRESS
3776 022602 005701          TST      R1          ;IS IT AN 11 OR A 70
3777 022604 100403          BMI      JUMP          ;ITS AN RH11
3778 022606 012777 000000 160544      MOV      #ZERO,RHBAE      ;SETUP BAE
3779 022614 012777 000061 160506      JUMP:   MOV      #WRITED,RHCS1    ;TELL IT TO WRITE
3780 022622 012777 000061 160500      MOV      #WRITED,RHCS1    ;CREATE THE ERROR
3781 022630 005037 003446          CLR      BITCNT          ;CLEAR BIT COUNTER
3782 022634 032777 000200 160466      18$:   BIT      #RDY,RHCS1    ;IS RDY SET
3783 022642 001015          BNE      PGETST          ;BIT IS SET
3784 022644 005237 003446          INC      BITCNT          ;COUNT UP
3785 022650 001371          BNE      18$          ;NOT FINISHED COUNTING
3786 022652 005037 003446          CLR      BITCNT          ;GET READY TO DO IT AGAIN
3787 022656 032777 000200 160444      19$:   BIT      #RDY,RHCS1    ;IS IT SET YET?
3788 022664 001004          BNE      PGETST          ;YES
3789 022666 005237 003446          INC      BITCNT          ;COUNT UP
3790 022672 001401          BEQ      PGETST          ;BIT IS NOT GOING TO SET
3791 022674 000770          BR
3792 022676          PGETST:
3793 022676 017737 160426 001162      MOV      RHCS1,$REGO      ;SET UP NEEDED BITS ONLY
3794 022704 042737 027777 001162      BIC      #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO
3795 022712 042777 100000 160442      BIC      #APE,RHCS3
3796                                     ;CLEAR BITS NOT NEEDED
3797 022720 017737 160404 003420      MOV      RHCS1,CS1      ;SAVE RHCS1
3798 022726 017737 160400 003444      MOV      RHWC,WC          ;SAVE WORD COUNT
3799 022734 017737 160374 003414      MOV      RHBA,BA          ;SAVE BUS ADDRESS
3800 022742 005701          TST      R1          ;IS IT AN RH11
3801 022744 001406          BEQ      B7$          ;NO IT'S A 70
3802 022746 005037 003416          CLR      BAE          ;CLEAR BAE
3803 022752 005037 003424          CLR      CS3          ;CLEAR CS3
3804 022756 000137 022776          JMP      B6$          ;CONTINUE
3805 022762 017737 160372 003416      87$:   MOV      RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
3806 022770 017737 160366 003424      MOV      RHCS3,CS3      ;SAVE RHCS3
3807 022776 017737 160336 003422      86$:   MOV      RHCS2,CS2      ;SAVE CS2
3808 023004 017737 160332 003432      MOV      RHST,DS1      ;SAVE TESTER STATUS
3809 023012 017737 160326 003436      MOV      RHERR,ER1      ;SAVE ERROR REGISTER
3810 023020 017737 160324 003442      MOV      RHTRD8,TDR      ;SAVE TESTER DATA REG.
3811 023026 017737 160304 003440      MOV      RHMR2,TC      ;SAVE MR2 TESTER REG.
3812 023034 032777 000200 160266      BIT      #RDY,RHCS1    ;IS READY SET
3813 023042 001003          BNE      99$          ;YES CONTINUE TEST
3814 023044 104102          ERROR 102          ;READY NOT SET
3815 023046 004737 007234          JSR      R7,WHYFO      ;ANY ERRORS SET
3816 023052 032777 002000 160260      99$:   BIT      #PGE,RHCS2    ;IS PGE SET
3817 023060 001016          BNE      1$          ;YES CHECK TRE AND SC
3818 023062 022737 140000 001162      CMP      #SC!TRE,$REGO    ;IS THE SC AND TRE BITS SET
3819 023070 001460          BEQ      2$          ;YES PGE IS IN ERROR
3820 023072 032737 040000 001162      BIT      #TRE,$REGO      ;IS JUST THE TRE BIT SET

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3821 023100 001060 BNE 3$ :TRE BIT MUST BE IN ERROR
3822 023102 032737 100000 001162 BIT #SC,$REGO :IS JUST THE SC BIT SET
3823 023110 001060 BNE 4$ :SC BIT SET ERRONIOUSLY
3824 023112 104051 ERROR 51 :PGE NOT SET IN RHCS2
3825 023114 000467 BR 8$ :SET UP TO TEST AGAIN
3826 023116 022737 140000 001162 1$: CMP #SC!TRE,$REGO :IS SC AND TRE SET
3827 023124 001030 BNE 22$ :FIND THE ERROR
3828 023126 013737 004124 004124 MOV $CS1,$CS1 :TEST FOR SHORTS
3829 023134 012737 175400 004126 MOV #MPE!MXF!NEM!NED!UPE!WCE!DLT,$CS2
3830 023142 013737 004130 004130 MOV $CS3,$CS3
3831 023150 013737 004132 004132 MOV $ST,$ST
3832 023156 012737 030175 004134 MOV #ILF!CPE!RMR!DPE!RMBEX!RFAIL!DTE!OPI,$ER
3833 023164 012737 177777 004122 MOV #-1,BEFORE :TELL WHYFO ITS FOR SHORTS
3834 023172 004737 007234 JSR R7,WHYFO :TEST FOR SHORTS
3835 023176 005037 004122 CLR BEFORE :WE HAVE CHECKED FOR SHORTS
3836 023202 000137 023274 JMP 8$ :LEAVE THE TEST
3837 023206 032737 040000 001152 22$: BIT #TRE,$REGO :THEN IS THE TRE BIT SET
3838 023214 001022 BNE 6$ :SC BIT DID NOT SEE TRE BIT
3839 023216 032737 100000 001162 BIT #SC,$REGO :IS THE SC BIT SET
3840 023224 001022 BNE 7$ :TRE HAS AN OPEN GOING TO BUS
3841 023226 104006 ERROR 6 :TRE SET LOGIC NOT WORKING
3842 023230 000421 BR 8$ :SET UP TO TEST AGAIN
3843 023232 104123 2$: ERROR 123 :PGE HAS OPEN IN LINE GOING TO BUS
3844 023234 004737 007234 JSR R7,WHYFO :SEE IF ANY OTHER ERROR BIT IS
3845 :SET OTHER THAN PGE
3846 023240 000415 BR 8$ :SET UP TO TEST AGAIN
3847 023242 104171 3$: ERROR 171 :SOMTHING WRONG WITH TRE BIT
3848 023244 004737 007234 JSR R7,WHYFO :SEE IF AN ERROR BIT IS SET
3849 :OR BOTH PGE IN RHCS2 AND SC IN
3850 :RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3851 023250 000411 BR 8$ :SET UP TO TEST AGAIN
3852 023252 104011 4$: ERROR 11 :SC BIT WAS SET BY EITHER ATTN OR
3853 023254 004737 007234 JSR R7,WHYFO :FIND WHAT ERROR BIT IS SET
3854 :MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3855 023260 000405 BR 8$ :SETUP TO TEST AGAIN
3856 023262 104172 6$: ERROR 172 :TRE WAS SET BY OTHER THAN PGE
3857 023264 004737 007234 JSR R7,WHYFO :FIND ERROR BIT THAT SET TRE
3858 023270 000401 BR 8$ :SETUP TO TEST AGAIN
3859 023272 104013 7$: ERROR 13 :TRE HAS AN OPEN GOING TO THE BUS
3860 023274 032737 041400 177570 8$: BIT #SW14!SW9!SWB,@#177570 :ANY LOOPING BEEING DONE
3861 023302 001003 BNE 21$ :YES,LOAD TRE NO MATTER WHAT
3862 023304 105737 001103 TSTB $ERFLG :WAS THERE AN ERROR
3863 023310 001010 BNE 9$ :SKIP TRE CHECK
3864 023312 112777 000100 160044 21$: MOVB #TREB,@RHCS1B :LOAD TRE
3865 023320 032777 002000 160012 BIT #PGE,@RHCS2 :DID ERROR CLEAR
3866 023326 001401 BEQ 9$ :YES EXIT TEST
3867 023330 104050 ERROR 50 :LOADING TRE DID NOT CLEAR ERROR
3868 023332 004737 006602 9$: JSR R7,CLEER :SEE IF ERRORS ARE CLEARED
3869 023336 004737 050130 JSR R7,ERRTST
3870 :*****
3871 :*TEST 30 MXF,TRE AND SC BIT TEST (RH11 ONLY)
3872 :*THIS TEST SEES IF MXF CAN BE SET BY A MOVE
3873 :*INSTRUCTION AND THAT TRE AND SC ARE SET IN
3874 :*RHCS1.MXF CAN BE SET THIS WAY IN AN RH11 BUT CN
3875 :*NOT BE SET THIS WAY IN AN RH70.....
3876 :*****

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K06

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 76
 DZRHBC.P11 T30 MXF,TRE AND SC BIT TEST (RH11 ONLY)

3877	023342	000004			TST30:	SCOPE			
3878	023344	005701				TST	R1		: IS IT A 70 OR 11
3879	023346	100402				BMI	LEAP		: IT'S AN RH11 DO THE TEST
3880	023350	000137	024102			JMP	FROG		: RH70, EXIT TEST
3881	023354	012777	000007	157756	LEAP:	MOV	#7, RHCS2		: SETUP UNIT 7
3882	023362	052777	001000	157750		BIS	#MXF, RHCS2		: SET MXF
3883	023370	005037	003446			CLR	BITCNT		: CLEAR BIT COUNTER
3884	023374	032777	001000	157736	18\$:	BIT	#MXF, RHCS2		: IS MXF SET
3885	023402	001015				BNE	MIXIT		: BIT IS SET
3886	023404	005237	003446			INC	BITCNT		: COUNT UP
3887	023410	001371				BNE	18\$		: NOT FINISHED COUNTING
3888	023412	005037	003446			CLR	BITCNT		: GET READY TO DO IT AGAIN
3889	023416	032777	001000	157714	19\$:	BIT	#MXF, RHCS2		: IS IT SET YET?
3890	023424	001004				BNE	MIXIT		: YES
3891	023426	005237	003446			INC	BITCNT		: COUNT UP
3892	023432	001401				BEQ	MIXIT		: BIT IS NOT GOING TO SET
3893	023434	000770				BR	19\$		
3894	023436				MIXIT:				
3895	023436	017737	157666	001162		MOV	RHCS1, \$REGO		: SET UP NEEDED BITS ONLY
3896	023444	042737	027777	001162		BIC	#GO! IE! RDY! A16! A17! PSEL! DVA! MCPE! READ6, \$REGO		
3897	023452	042777	100000	157702		BIC	#APE, RHCS3		
3898									: CLEAR BITS NOT NEEDED
3899	023460	017737	157644	003420		MOV	RHCS1, CS1		: SAVE RHCS1
3900	023466	017737	157640	003444		MOV	RHWC, WC		: SAVE WORD COUNT
3901	023474	017737	157634	003414		MOV	RHBA, BA		: SAVE BUS ADDRESS
3902	023502	005701				TST	R1		: IS IT AN RH11
3903	023504	001406				BEQ	87\$		: NO IT'S A 70
3904	023506	005037	003416			CLR	BAE		: CLEAR BAE
3905	023512	005037	003424			CLR	CS3		: CLEAR CS3
3906	023516	000137	023536			JMP	86\$		: CONTINUE
3907	023522	017737	157632	003416	87\$:	MOV	RHBAE, BAE		: SAVE BUS ADDRESS EXTENSION
3908	023530	017737	157626	003424		MOV	RHCS3, CS3		: SAVE RHCS3
3909	023536	017737	157576	003422	86\$:	MOV	RHCS2, CS2		: SAVE CS2
3910	023544	017737	157572	003432		MOV	RHST, DS1		: SAVE TESTER STATUS
3911	023552	017737	157566	003436		MOV	RHER, ER1		: SAVE ERROR REGISTER
3912	023560	017737	157564	003442		MOV	RHTDB, TDR		: SAVE TESTER DATA REG.
3913	023566	017737	157544	003440		MOV	RHMR2, TC		: SAVE MR2 TESTER REG.
3914	023574	032777	000200	157526		BIT	#RDY, RHCS1		: IS READY SET
3915	023602	001003				BNE	99\$		: YES CONTINUE TEST
3916	023604	104102				ERROR	102		: READY NOT SET
3917	023606	004737	007234			JSR	R7, WHYFO		: ANY ERRORS SET
3918	023612	032777	001000	157520	99\$:	BIT	#MXF, RHCS2		: IS MXF SET
3919	023620	001016				BNE	1\$		: YES CHECK TRE AND SC
3920	023622	022737	140000	001162		CMP	#SC! TRE, \$REGO		: IS THE SC AND TRE BITS SET
3921	023630	001460				BEQ	2\$		: YES MXF IS IN ERROR
3922	023632	032737	040000	001162		BIT	#TRE, \$REGO		: IS JUST THE TRE BIT SET
3923	023640	001060				BNE	3\$		: TRE BIT MUST BE IN ERROR
3924	023642	032737	100000	001162		BIT	#SC, \$REGO		: IS JUST THE SC BIT SET
3925	023650	001060				BNE	4\$		: SC BIT SET ERRONIOUSLY
3926	023652	104030				ERROR	30		: MXF NOT SET IN RHCS2
3927	023654	000467				BR	8\$		: SET UP TO TEST AGAIN
3928	023656	022737	140000	001162	1\$:	CMP	#SC! TRE, \$REGO		: IS SC AND TRE SET
3929	023664	001030				BNE	22\$		: FIND THE ERROR
3930	023666	013737	004124	004124		MOV	\$CS1, \$CS1		: TEST FOR SHORTS
3931	023674	012737	176400	004126		MOV	#MPE! PGE! NEM! NED! UPE! WCE! DLT, \$CS2		
3932	023702	013737	004130	004130		MOV	\$CS3, \$CS3		

3933	023710	013737	004132	004132		MOV	\$ST,\$ST	
3934	023716	013737	004134	004134		MOV	\$ER,\$ER	
3935	023724	012737	177777	004122		MOV	#-1,BEFORE	: TELL WHYFO ITS FOR SHORTS
3936	023732	004737	007234			JSR	R7,WHYFO	: TEST FOR SHORTS
3937	023736	005037	004122			CLR	BEFORE	: WE HAVE CHECKED FOR SHORTS
3938	023742	000137	024034			JMP	BS	: LEAVE THE TEST
3939	023746	032737	040000	001162	22:	BIT	#TRE,\$REGO	: THEN IS THE TRE BIT SET
3940	023754	001022				BNE	BS	: SC BIT DID NOT SEE TRE BIT
3941	023756	032737	100000	001162		BIT	#SC,\$REGO	: IS THE SC BIT SET
3942	023764	001022				BNE	7S	: TRE HAS AN OPEN GOING TO BUS
3943	023766	104006				ERROR	6	: TRE SET LOGIC NOT WORKING
3944	023770	000421				BR	BS	: SET UP TO TEST AGAIN
3945	023772	104031			25:	ERROR	31	: MXF HAS OPEN IN LINE GOING TO BUS
3946	023774	004737	007234			JSR	R7,WHYFO	: SEE IF ANY OTHER ERROR BIT IS
3947								: SET OTHER THAN MXF
3948	024000	000415				BR	BS	: SET UP TO TEST AGAIN
3949	024002	104032			35:	ERROR	32	: SOMTHING WRONG WITH TRE BIT
3950	024004	004737	007234			JSR	R7,WHYFO	: SEE IF AN ERROR BIT IS SET
3951								: OR BOTH MXF IN RHCS2 AND SC IN
3952								: RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3953	024010	000411				BR	BS	: SET UP TO TEST AGAIN
3954	024012	104011			45:	ERROR	11	: SC BIT WAS SET BY EITHER ATTN OR
3955	024014	004737	007234			JSR	R7,WHYFO	: FIND WHAT ERROR BIT IS SET
3956								: MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3957	024020	000405				BR	BS	: SETUP TO TEST AGAIN
3958	024022	104033			65:	ERROR	33	: TRE WAS SET BY OTHER THAN MXF
3959	024024	004737	007234			JSR	R7,WHYFO	: FIND ERROR BIT THAT SET TRE
3960	024030	000401				BR	BS	: SETUP TO TEST AGAIN
3961	024032	104013			75:	ERROR	13	: TRE HAS AN OPEN GOING TO THE BUS
3962	024034	032737	041400	177570	85:	BIT	#SW14!SW9!SW8,2#177570	: ANY LOOPING BEEING DONE
3963	024042	001003				BNE	21S	: YES,LOAD TRE NO MATTER WHAT
3964	024044	105737	001103			TSTB	\$ERFLG	: WAS THERE AN ERROR
3965	024050	001010				BNE	9S	: SKIP TRE CHECK
3966	024052	112777	000100	157304	21S:	MOVB	#TREB,2RHCS1B	: LOAD TRE
3967	024060	032777	001000	157252		BIT	#MXF,2RHCS2	: DID ERROR CLEAR
3968	024066	001401				BEQ	9S	: YES EXIT TEST
3969	024070	104050				ERROR	50	: LOADING TRE DID NOT CLEAR ERROR
3970	024072	004737	006602		9S:	JSR	R7,CLEER	: SEE IF ERRORS ARE CLEARED
3971	024076	004737	050130			JSR	R7,ERRTST	
3972	024102							
3973								
3974								
3975								
3976								
3977								
3978	024102	000004						
3979	024104	012777	000007	157226		MOV	#7,2RHCS2	: SETUP UNIT NO.
3980	024112	012777	000010	157234		MOV	#ICPA,2AHMR1	: INVERT CONTROL PARITY
3981	024120	013777	001162	157222		MOV	\$REGO,2RHDTB	: TRANSFER INFO TO TESTER
3982	024126	013777	001162	157214		MOV	\$REGO,2RHDTB	: DO IT FOR SECOND TIME
3983	024134	005037	003446			CLR	BITCNT	: CLEAR BIT COUNTER
3984	024140	032777	000200	157162	18S:	BIT	#RDY,2RHCS1	: IS RDY SET
3985	024146	001015				BNE	MCPE↑	: BIT IS SET
3986	024150	005237	003446			INC	BITCNT	: COUNT UP
3987	024154	001371				BNE	18S	: NOT FINISHED COUNTING
3988	024156	005037	003446			CLR	BITCNT	: GET READY TO DO IT AGAIN

FROG:
 ;*****
 ;*TEST 31 MCPE AND SC ERROR TET
 ;*THIS TEST CHECKS THAT MCPE CAN BE SET IN RHCS1
 ;*AND THAT MCPE SETS SC IN RHCS1.....
 ;*****
 ;*ST31: SCOPE
 MOV #7,2RHCS2
 MOV #ICPA,2AHMR1
 MOV \$REGO,2RHDTB
 MOV \$REGO,2RHDTB
 CLR BITCNT
 BIT #RDY,2RHCS1
 BNE MCPE↑
 INC BITCNT
 BNE 18S
 CLR BITCNT

M06

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 78
 DZRHBC.P11 T31 MCPE AND SC ERROR TEST

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3989 024162 032777 000200 157140 195: BIT #RDY, RHCS1 ;IS IT SET YET?
3990 024170 001004 BNE MCPET ;YES
3991 024172 005237 003446 INC BITCNT ;COUNT UP
3992 024176 001401 BEQ MCPET ;BIT IS NOT GOING TO SET
3993 024200 000770 BR 195
3994 024202 MCPET:
3995 024202 017737 157122 003420 MOV RHCS1, CS1 ;SAVE RHCS1
3996 024210 017737 157116 003444 MOV RHWC, WC ;SAVE WORD COUNT
3997 024216 017737 157112 003414 MOV RHBA, BA ;SAVE BUS ADDRESS
3998 024224 005701 TST R1 ;IS IT AN RH11
3999 024226 001406 BEQ 875 ;NO IT'S A 70
4000 024230 005037 003416 CLR BAE ;CLEAR BAE
4001 024234 005037 003424 CLR CS3 ;CLEAR CS3
4002 024240 000137 024260 JMP 865 ;CONTINUE
4003 024244 017737 157110 003416 875: MOV RHBAE, BAE ;SAVE BUS ADDRESS EXTENSION
4004 024252 017737 157104 003424 MOV RHCS3, CS3 ;SAVE RHCS3
4005 024260 017737 157054 003422 865: MOV RHCS2, CS2 ;SAVE CS2
4006 024266 017737 157050 003432 MOV RHST, DS1 ;SAVE TESTER STATUS
4007 024274 017737 157044 003436 MOV RHERR, ER1 ;SAVE ERROR REGISTER
4008 024302 017737 157042 003442 MOV RHTRD, TDR ;SAVE TESTER DATA REG.
4009 024310 017737 157022 003440 MOV RHMR2, TC ;SAVE MR2 TESTER REG.
4010 024316 032777 000200 157004 BIT #RDY, RHCS1 ;IS READY SET
4011 024324 001003 BNE MPETST ;YES, TEST MCPE
4012 024326 104102 ERROR 102 ;READY IS NOT SET
4013 024330 004737 007234 JSR R7, WHYFO ;ANY ERRORS SET
4014 024334 032777 020000 156766 MPETST: BIT #MCPE, RHCS1 ;IS MCPE SET
4015 024342 001425 BEQ 15 ;
4016 024344 032777 100000 156756 BIT #SC, RHCS1 ;IS SC SET
4017 024352 001416 BEQ 225 ;SC NOT SET
4018 024354 012737 040000 004124 MOV #TRE, SCS1 ;GET READY TO TEST FOR SHORTS
4019 024362 012737 177400 004126 MOV #MPE!MXF!PGE!NEM!NED!UPE!WCE!DLT, SCS2
4020 024370 012737 177777 004122 MOV #-1, BEFORE
4021 024376 004737 007234 JSR R7, WHYFO ;SEE IF ANY SHORTS
4022 024402 005037 004122 CLR BEFORE
4023 024406 000406 BR ERR30 ;GET OUT OF TEST
4024 024410 104130 225: ERROR 130 ;MCPE ERROR OK BUT SC DID
4025 ;NOT SET SC HAS OPEN TO
4026 ;BUS OR MCPE GOING TO OR
4027 ;GATE FOR SC WAS NOT SEEN
4028 024412 000137 024424 JMP ERR30
4029 024416 104131 15: ERROR 131 ;MCPE DID NOT SET
4030 024420 004737 007234 JSR R7, WHYFO ;WAS THERE ANOTHER ERROR
4031 024424 004737 006602 ERR30: JSR R7, CLEAR ;CLEAR ERRORS
4032 024430 004737 050130 JSR R7, ERRST ;WAS THERE AN ERROR
4033 ;*****
4034 ;*TEST 32 DOUBLE TRANSFER TEST, 1 WORD FROM AN ADDRESS BASE 4
4035 ;*THIS TEST CHECKS THAT A ONE WORD TRANSFER
4036 ;*FROM AN ADDRESS DIVISIBLE BY 4 WILL NOT SET
4037 ;*DBL IN RHCS3.....RH70 ONLY.....
4038 ;*****
4039 ;*****
4040 024434 000004 TST32: SCOPE
4041 024436 005701 TST R1 ;IS IN AN RH11
4042 024440 100532 BMI TST33 ;;GET OUT OF TEST
4043 024442 012777 177777 156662 MOV #-1, RHWC ;SET UP WC FOR ONE WORD
4044 024450 012777 004000 156656 MOV #EVENAD, RHBA ;SETUP BUS ADDRESS

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N06

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 79
DZRHBC.P11 T32 DOUBLE TRANSFER TEST,1 WORD FROM AN ADDRESS BASE 4

4045	024456	012777	000000	156674		MOV	#ZERO,ARHBAE	;SETUP BUS ADDRESS EXTENSION
4046	024464	012777	000007	156646		MOV	#7,ARHCS2	;DEVICE 7
4047	024472	012777	000061	156630		MOV	#WRITED,ARHCS1	;TELL IT TO WRITED
4048	024500	005037	003446			CLR	BITCNT	;CLEAR BIT COUNTER
4049	024504	032777	000200	156616	18\$:	BIT	#RDY,ARHCS1	;IS RDY SET
4050	024512	001015				BNE	3\$	;BIT IS SET
4051	024514	005237	003446			INC	BITCNT	;COUNT UP
4052	024520	001371				BNE	18\$	;NOT FINISHED COUNTING
4053	024522	005037	003446			CLR	BITCNT	;GET READY TO DO IT AGAIN
4054	024526	032777	000200	156574	19\$:	BIT	#RDY,ARHCS1	;IS IT SET YET?
4055	024534	001004				BNE	3\$	;YES
4056	024536	005237	003446			INC	BITCNT	;COUNT UP
4057	024542	001401				BEQ	3\$	;BIT IS NOT GOING TO SET
4058	024544	000770				BR	19\$	
4059	024546				3\$:			
4060	024546	017737	156556	003420		MOV	ARHCS1,CS1	;SAVE RHCS1
4061	024554	017737	156552	003444		MOV	ARHWC,WC	;SAVE WORD COUNT
4062	024562	017737	156546	003414		MOV	ARHBA,BA	;SAVE BUS ADDRESS
4063	024570	005701				TST	R1	;IS IT AN RH11
4064	024572	001406				BEQ	87\$	;NO IT'S A 70
4065	024574	005037	003416			CLR	BAE	;CLEAR BAE
4066	024600	005037	003424			CLR	CS3	;CLEAR CS3
4067	024604	000137	024624			JMP	86\$	;CONTINUE
4068	024610	017737	156544	003416	87\$:	MOV	ARHBAE,BAE	;SAVE BUS ADDRESS EXTENSION
4069	024616	017737	156540	003424		MOV	ARHCS3,CS3	;SAVE RHCS3
4070	024624	017737	156510	003422	86\$:	MOV	ARHCS2,CS2	;SAVE CS2
4071	024632	017737	156504	003432		MOV	ARHST,DS1	;SAVE TESTER STATUS
4072	024640	017737	156500	003436		MOV	ARHER,ER1	;SAVE ERROR REGISTER
4073	024646	017737	156476	003442		MOV	ARHTDB,TDR	;SAVE TESTER DATA REG.
4074	024654	017737	156456	003440		MOV	ARHMR2,TC	;SAVE MR2 TESTER REG.
4075	024662	032777	000200	156440		BIT	#RDY,ARHCS1	;IS READY SET
4076	024670	001003				BNE	1\$	;RDY SET CONT. TEST
4077	024672	104102				ERROR	102	;READY DID NOT SET
4078	024674	004737	007234			JSR	R7,WHYFO	;ANY ERRORS SET
4079	024700	032777	002000	156454	1\$:	BIT	#DBL,ARHCS3	;IS DOUBLE SET
4080	024706	001403				BEQ	2\$	;DBL SET
4081	024710	104125				ERROR	125	;DBL DID SET ON A 1 WORD TRANSFER
4082	024712	004737	007234			JSR	R7,WHYFO	;TELL WHY NOT
4083	024716	004737	006602		2\$:	JSR	R7,CLEER	;CLEAR ERRORS
4084	024722	004737	050130			JSR	R7,ERRTST	
4085						;*****		
4086						;*TEST 33 DOUBLES TEST FOR TWO WORD BASE 4 ADDRESS		
4087						;*THIS TEST CHECKS THAT DOUBLE WILL SET FOR A		
4088						;*TWO WORD TRANSFER STARTING FROM AN ADDRESS		
4089						;*DIVISIBLE BY 4.....RH70 ONLY.....		
4090						;*****		
4091	024726	000004				TST33:	SCOPE	
4092	024730	005701				TST	R1	;IS IT AN 11 OR A 70
4093	024732	100524				BMI	TST34	::GET OUT OF TEST
4094	024734	012777	177776	156370		MOV	#-2,ARHWC	;SETUP WORD COUNT FOR DOUBLE TRANSFER
4095	024742	012777	004000	156364		MOV	#EVENAD,ARHBA	;CORRECT BA
4096	024750	012777	000061	156352		MOV	#WRITED,ARHCS1	;TELL IT TO WRITE
4097	024756	005037	003446			CLR	BITCNT	;CLEAR BIT COUNTER
4098	024762	032777	000200	156340	18\$:	BIT	#RDY,ARHCS1	;IS RDY SET
4099	024770	001015				BNE	DBLWDS	;BIT IS SET
4100	024772	005237	003446			INC	BITCNT	;COUNT UP

```

4101 024776 001371 BNE 18$ :NOT FINISHED COUNTING
4102 025000 005037 003446 CLR BITCNT :GET READY TO DO IT AGAIN
4103 025004 032777 000200 156316 19$: BIT $RDY, $RHCS1 :IS IT SET YET?
4104 025012 001004 BNE DBLWDS :YES
4105 025014 005237 003446 INC BITCNT :COUNT UP
4106 025020 001401 BEQ DBLWDS :BIT IS NOT GOING TO SET
4107 025022 000770 BR 19$
4108 025024 DBLWDS:
4109 025024 017737 156300 003420 MOV $RHCS1, CS1 :SAVE RHCS1
4110 025032 017737 156274 003444 MOV $RHWC, WC :SAVE WORD COUNT
4111 025040 017737 156270 003414 MOV $RHBA, BA :SAVE BUS ADDRESS
4112 025046 005701 TST R1 :IS IT AN RH11
4113 025050 001406 BEQ 87$ :NO IT'S A 70
4114 025052 005037 003416 CLR BAE :CLEAR BAE
4115 025056 005037 003424 CLR CS3 :CLEAR CS3
4116 025062 000137 025102 JMP BCS :CONTINUE
4117 025066 017737 156266 003416 87$: MOV $RHBAE, BAE :SAVE BUS ADDRESS EXTENSION
4118 025074 017737 156262 003424 MOV $RHCS3, CS3 :SAVE RHCS3
4119 025102 017737 156232 003422 86$: MOV $RHCS2, CS2 :SAVE CS2
4120 025110 017737 156226 003432 MOV $RHST, DS1 :SAVE TESTER STATUS
4121 025116 017737 156222 003436 MOV $RHER, ER1 :SAVE ERROR REGISTER
4122 025124 017737 156220 003442 MOV $RHTDB, TDR :SAVE TESTER DATA REG.
4123 025132 017737 156200 003440 MOV $RHR2, TC :SAVE MR2 TESTER REG.
4124 025140 032777 000200 156162 BIT $RDY, $RHCS1 :IS READY SET
4125 025146 001003 BNE FOOEY :RDY IS SET
4126 025150 104102 ERROR 102 :RDY DID NOT SET
4127 025152 004737 007234 JSR R7, WHYFO :ANY ERRORS SET
4128 025156 032777 002000 156176 FOOEY: BIT $DBL, $RHCS3 :IS DOUBLE SET
4129 025164 001003 BNE ER1R :DBL IS SET
4130 025166 104127 ERROR 127 :DBL DID NOT SET IN RHCS3
4131 025170 004737 007234 JSR R7, WHYFO :ANY OTHER ERROR SET
4132 025174 004737 006602 ER1R: JSR R7, CLEER :CLEAR ERRORS
4133 025200 004737 050130 JSR R7, ERRST
4134 *****
4135 :*TEST 34 DOUBLE TEST, 3 WORD TRANSFER FROM A BASE 4 ADDRESS
4136 :*THIS TEST CHECKS THAT DBL WILL NOT SET
4137 :*IN RHCS3 AFTER A 3 WORD TRANSFER STARTING
4138 :*FROM AN ADDRESS DIVISIBLE BY 4
4139 :*.....RH70 ONLY.....
4140 *****
4141 025204 000004 1ST34: SCOPE
4142 025206 005701 TST R1 :IS IT AN 11 OR A 70
4143 025210 100524 BMI TST35 ;;GET OUT OF TEST
4144 025212 012777 177775 156112 MOV #-3, $RHWC :SET UP FOR A 3 WORD TRANSFER
4145 025220 012777 004000 156106 MOV $EVENAD, $RHBA :CORRECT BA
4146 025226 012777 000061 156074 MOV $WRITED, $RHCS1 :TELL IT TO WRITE
4147 025234 005037 003446 CLR BITCNT :CLEAR BIT COUNTER
4148 025240 032777 000200 156062 18$: BIT $RDY, $RHCS1 :IS RDY SET
4149 025246 001015 BNE THREE :BIT IS SET
4150 025250 005237 003446 INC BITCNT :COUNT UP
4151 025254 001371 BNE 18$ :NOT FINISHED COUNTING
4152 025256 005037 003446 CLR BITCNT :GET READY TO DO IT AGAIN
4153 025262 032777 000200 156040 19$: BIT $RDY, $RHCS1 :IS IT SET YET?
4154 025270 001004 BNE THREE :YES
4155 025272 005237 003446 INC BITCNT :COUNT UP
4156 025276 001401 BEQ THREE :BIT IS NOT GOING TO SET

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C07

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 81
 DCRHBC.P11 T34 DOUBLE TEST .3 WORD TRANSFER FROM A BASE 4 ADDRESS

```

4157 025300 000770 BR 19%
4158 025302
4159 025302 017737 156022 003420 THREE: MOV RHCS1,CS1 ;SAVE RHCS1
4160 025310 017737 156016 003444 MOV RHWC,WC ;SAVE WORD COUNT
4161 025316 017737 156012 003414 MOV RHBA,BA ;SAVE BUS ADDRESS
4162 025324 005701 TST R1 ;IS IT AN RH11
4163 025326 001406 BEQ 87% ;NO IT'S A 70
4164 025330 005037 003416 CLR BAE ;CLEAR BAE
4165 025334 005037 003424 CLR CS3 ;CLEAR CS3
4166 025340 000137 025360 JMP 86% ;CONTINUE
4167 025344 017737 156010 003416 87%: MOV RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4168 025352 017737 156004 003424 MOV RHCS3,CS3 ;SAVE RHCS3
4169 025360 017737 155754 003422 86%: MOV RHCS2,CS2 ;SAVE CS2
4170 025366 017737 155750 003432 MOV RHST,DS1 ;SAVE TESTER STATUS
4171 025374 017737 155744 003436 MOV RHERR,ER1 ;SAVE ERROR REGISTER
4172 025402 017737 155742 003442 MOV RHTRD,TRD ;SAVE TESTER DATA REG.
4173 025410 017737 155722 003440 MOV RHMR2,TC ;SAVE MR2 TESTER REG.
4174 025416 032777 000200 155704 BIT RDY,RHCS1 ;IS READY SET
4175 025424 001003 BNE ERRIP ;RDY IS SET
4176 025426 104102 ERROR 102 ;RDY DID NOT SET
4177 025430 004737 007234 JSR R7,WHYFO ;ANY ERRORS SET
4178 025434 032777 002000 155720 ERRIP: BIT DBL,RHCS3 ;IS DOUBLE SET
4179 025442 001403 BEQ ERPIP ;DBL IS SET
4180 025444 104126 ERROR 126 ;DOUBLE SET ON A 3 WORD TRANSFER
4181 025446 004737 007234 JSR R7,WHYFO ;SEE IF ANY ERROR BITS ARE SET
4182 025452 004737 006602 ERPIP: JSR R7,CLEER ;CLEAR ERRORS
4183 025456 004737 050130 JSR R7,ERRTST
4184
4185 ;*****
4186 ;*TEST 35 DOUBLE TEST .4 WORDS FROM A BASE 4 ADDRESS
4187 ;*THIS TEST CHECKS THAT DBL WILL SET IN RHCS3
4188 ;*AFTER A 4 WORD TRANSFER STARTING WITH AN
4189 ;*ADDRESS DIVISIBLE BY 4*****
4190 ;*.....RH70 ONLY.....
4191 ;*****
4192
4193 TST35: SCOPE
4194 TST R1 ;IS IT AN 11 OR A 70
4195 BMI TST36 ;;GET OUT OF TEST
4196 MOV 8-4,RHWC ;SET UP FOR 4 WORD TRANSFER
4197 MOV #EVENAD,RHBA ;CORRECT BA
4198 MOV #WRITED,RHCS1 ;TELL IT TO WRITE
4199 CLR BITCNT ;CLEAR BIT COUNTER
4200 BIT RDY,RHCS1 ;IS RDY SET
4201 BNE DBLED ;BIT IS SET
4202 INC BITCNT ;COUNT UP
4203 BNE 18% ;NOT FINISHED COUNTING
4204 CLR BITCNT ;GET READY TO DO IT AGAIN
4205 BIT RDY,RHCS1 ;IS IT SET YET?
4206 BNE DBLED ;YES
4207 INC BITCNT ;COUNT UP
4208 BEQ DBLED ;BIT IS NOT GOING TO SET
4209 BR 19%
4210 DBLED: MOV RHCS1,CS1 ;SAVE RHCS1
4211 MOV RHWC,WC ;SAVE WORD COUNT
4212 MOV RHBA,BA ;SAVE BUS ADDRESS
4213 TST R1 ;IS IT AN RH11

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007

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-75 09:03 PAGE 82
 DZAHBC.P11 T35 DOUBLE TEST .4 WORDS FROM A BASE 4 ADDRESS

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4213 025604 001406 BEQ 87$ :NO IT'S A 70
4214 025606 005037 003416 CLR BAE :CLEAR BAE
4215 025612 005037 003424 CLR CS3 :CLEAR CS3
4216 025616 000137 025636 JMP 86$ :CONTINUE
4217 025622 017737 155532 003416 87$: MOV JAHBAE,BAE :SAVE BUS ADDRESS EXTENSION
4218 025630 017737 155526 003424 MOV JAHCS3,CS3 :SAVE RHCS3
4219 025636 017737 155476 003422 86$: MOV JAHCS2,CS2 :SAVE CS2
4220 025644 017737 155472 003432 MOV JAHST,DS1 :SAVE TESTER STATUS
4221 025652 017737 155466 003436 MOV JAHER,ER1 :SAVE ERROR REGISTER
4222 025660 017737 155464 003442 MOV JAHTD8,TDR :SAVE TESTER DATA REG.
4223 025666 017737 155444 003440 MOV JAHMR2,TC :SAVE MR2 TESTER REG.
4224 025674 032777 000200 155426 BIT #RDY,JAHCS1 :IS READY SET
4225 025702 001003 BNE DAYAMS :RDY IS SET
4226 025704 104102 ERROR 102 :RDY DID NOT SET
4227 025706 004737 007234 JSR R7,WHYFO :WHAT ERRORS ARE SET
4228 025712 032777 002000 155442 DAYAMS: BIT #DBL,JAHCS3 :IS DOUBLE SET
4229 025720 001003 BNE ERR29 :TEST IS OK
4230 025722 104124 ERROR 124 :DOUBLE DID NOT SET AFTER A 4 WORD
4231 025724 004737 007234 JSR R7,WHYFO :SEE IF ANY ERROR ARE SET
4232 025730 004737 006602 ERR29: JSR R7,CLEER :CLEAR ERRORS
4233 025734 004737 050130 JSR R7,ERRTST

*****
:TEST 36 DOUBLE TEST 1WORD TRANSFER READ
:THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
:WRITE FWD AND REV AND WITH BAI SET IN RHCS2
:OPERATION BEING PERFORMED WILL BE PRINTED OUT
:IN ERROR MESSAGE.
:.....RH70 ONLY.....
*****
4244 025740 000004 TST36: SCOPE
4245 025742 005701 TST R1 :IS IN AN RH11
4246 025744 100532 BMI TST37 ;;GET OUT OF TEST
4247 025746 012777 177777 155356 MOV #1,JAHWC :SET UP WC FOR ONE WORD
4248 025754 012777 004000 155352 MOV #EVENAD,JAHBA :SETUP BUS ADDRESS
4249 025762 012777 000000 155370 MOV #ZERO,JAHBAE :SETUP BUS ADDRESS EXTENSION
4250 025770 012777 000007 155342 MOV #7,JAHCS2 :DEVICE 7
4251 025776 012777 000071 155324 MOV #READO,JAHCS1 :TELL IT TO READO
4252 026004 005037 003446 CLR BITCNT :CLEAR BIT COUNTER
4253 026010 032777 000200 155312 18$: BIT #RDY,JAHCS1 :IS RDY SET
4254 026016 001015 BNE 3$ :BIT IS SET
4255 026020 005237 003446 INC BITCNT :COUNT UP
4256 026024 001371 BNE 18$ :NOT FINISHED COUNTING
4257 026026 005037 003446 CLR BITCNT :GET READY TO DO IT AGAIN
4258 026032 032777 000200 155270 19$: BIT #RDY,JAHCS1 :IS IT SET YET?
4259 026040 001004 BNE 3$ :YES
4260 026042 005237 003446 INC BITCNT :COUNT UP
4261 026046 001401 BEQ 3$ :BIT IS NOT GOING TO SET
4262 026050 000770 BR 19$
4263 026052 3$:
4264 026052 017737 155252 003420 MOV JAHCS1,CS1 :SAVE RHCS1
4265 026060 017737 155246 003444 MOV JAHWC,WC :SAVE WORD COUNT
4266 026066 017737 155242 003414 MOV JAHBA,BA :SAVE BUS ADDRESS
4267 026074 005701 TST R1 :IS IT AN RH11
4268 026076 001406 BEQ 87$ :NO IT'S A 70

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E07

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 83
 DZRHBC.P11 T36 DOUBLE TEST 1WORD TRANSFER READ

4269	026100	005037	003416		CLR	BAE	:CLEAR BAE
4270	026104	005037	003424		CLR	CS3	:CLEAR CS3
4271	026110	000137	026130		JMP	86\$	:CONTINUE
4272	026114	017737	155240	003416	87\$: MOV	2RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
4273	026122	017737	155234	003424	MOV	2RHCS3,CS3	:SAVE RHCS3
4274	026130	017737	155204	003422	86\$: MOV	2RHCS2,CS2	:SAVE CS2
4275	026136	017737	155200	003432	MOV	2RHST,051	:SAVE TESTER STATUS
4276	026144	017737	155174	003436	MOV	2RHER,ER1	:SAVE ERROR REGISTER
4277	026152	017737	155172	003442	MOV	2RHTDB,TDR	:SAVE TESTER DATA REG.
4278	026160	017737	155152	003440	MOV	2RHMR2,TC	:SAVE MR2 TESTER REG.
4279	026166	032777	000200	155134	BIT	2RDY,2RHCS1	:IS READY SET
4280	026174	001003			BNE	1\$	:RDY SET CONT. TEST
4281	026176	104102			ERROR	102	:READY DID NOT SET
4282	026200	004737	007234		JSR	R7,WHYFO	:ANY ERRORS SET
4283	026204	032777	002000	155150	1\$: BIT	2DBL,2RHCS3	:IS DOUBLE SET
4284	026212	001403			BEQ	2\$	:DBL SET
4285	026214	104154			ERROR	154	:DBL DID SET ON A 1 WORD TRANSFER
4286	026216	004737	007234		JSR	R7,WHYFO	:TELL WHY NOT
4287	026222	004737	006602		2\$: JSR	R7,CLEER	:CLEAR ERRORS
4288	026226	004737	050130		JSR	R7,ERRTST	
4289					:*****		
4290					: *TEST 37 DOUBLE TEST WITH 2 WORD TRANSFER AND BAI SET		
4291					: *THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV		
4292					: *WRITE FWD AND REV AND WITH BAI SET IN RHCS2		
4293					: *OPERATION BEING PERFORMED WILL BE PRINTED OUT		
4294					: *IN ERROR MESSAGE.		
4295					: *.....RH70 ONLY.....		
4296					:*****		
4297	026232	000004			1\$T37: SCOPE		
4298	026234	005701			TST	R1	:IS IN AN RH11
4299	026236	100532			BMI	TST40	::GET OUT OF TEST
4300	026240	012777	177776	155064	MOV	2-2,2RHWC	:SET UP WC FOR TWO WORD
4301	026246	012777	004000	155060	MOV	2EVENAD,2RHBA	:SETUP BUS ADDRESS
4302	026254	012777	000000	155076	MOV	2ZERO,2RHBAE	:SETUP BUS ADDRESS EXTENSION
4303	026262	012777	000017	155050	MOV	27!BAI,2RHCS2	:DEVICE 7
4304	026270	012777	000061	155032	MOV	2WRITED,2RHCS1	:TELL IT TO WRITED
4305	026276	005037	003446		CLR	BITCNT	:CLEAR BIT COUNTER
4306	026302	032777	000200	155020	18\$: BIT	2RDY,2RHCS1	:IS RDY SET
4307	026310	001015			BNE	3\$	:BIT IS SET
4308	026312	005237	003446		INC	BITCNT	:COUNT UP
4309	026316	001371			BNE	18\$	:NOT FINISHED COUNTING
4310	026320	005037	003446		CLR	BITCNT	:GET READY TO DO IT AGAIN
4311	026324	032777	000200	154776	19\$: BIT	2RDY,2RHCS1	:IS IT SET YET?
4312	026332	001004			BNE	3\$	:YES
4313	026334	005237	003446		INC	BITCNT	:COUNT UP
4314	026340	001401			BEQ	3\$	:BIT IS NOT GOING TO SET
4315	026342	000770			BR	19\$	
4316	026344				3\$: MOV	2RHCS1,CS1	:SAVE RHCS1
4317	026344	017737	154760	003420	MOV	2RHWC,WC	:SAVE WORD COUNT
4318	026352	017737	154754	003444	MOV	2RHBA,BA	:SAVE BUS ADDRESS
4319	026360	017737	154750	003414	MOV		
4320	026366	005701			TST	R1	:IS IT AN RH11
4321	026370	001406			BEQ	87\$	:NO IT'S A 70
4322	026372	005037	003416		CLR	BAE	:CLEAR BAE
4323	026376	005037	003424		CLR	CS3	:CLEAR CS3
4324	026402	000137	026422		JMP	86\$	:CONTINUE

F07

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 84
 DZRHBC.P11 T37 DOUBLE TEST WITH 2 WORD TRANSFER AND BAI SET

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4325 026406 017737 154746 003416 87$: MOV 2RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4326 026414 017737 154742 003424 MOV 2RHCS3,CS3 ;SAVE RHCS3
4327 026422 017737 154712 003422 86$: MOV 2RHCS2,CS2 ;SAVE CS2
4328 026430 017737 154706 003432 MOV 2RHST,DS1 ;SAVE TESTER STATUS
4329 026436 017737 154702 003436 MOV 2RHER,ER1 ;SAVE ERROR REGISTER
4330 026444 017737 154700 003442 MOV 2RHTDB,TDR ;SAVE TESTER DATA REG.
4331 026452 017737 154660 003440 MOV 2RHMR2,TC ;SAVE MR2 TESTER REG.
4332 026460 032777 000200 154642 BIT 2RDY,2RHCS1 ;IS READY SET
4333 026466 001003 BNE 1$ ;RDY SET CONT. TEST
4334 026470 104102 ERROR 102 ;READY DID NOT SET
4335 026472 004737 007234 JSR R7,WHYFO ;ANY ERRORS SET
4336 026476 032777 002000 154656 1$: BIT 2DBL,2RHCS3 ;IS DOUBLE SET
4337 026504 001403 BEQ 2$ ;DBL SET
4338 026506 104153 ERROR 153 ;DBL DID SET ON A 2 WORD TRANSFER
4339 026510 004737 007234 JSR R7,WHYFO ;TELL WHY NOT
4340 026514 004737 006602 JSR R7,CLEER ;CLEAR ERRORS
4341 026520 004737 050130 JSR R7,ERRTST
4342 *****
4343 ;*TEST 40 DBL TEST 2 WORD TRANSFER WITH BAI AND WRITE REV
4344 ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4345 ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4346 ;*OPERATION BEING PERFORMED WILL BE PRINTED OUT
4347 ;*IN ERROR MESSAGE.
4348 ;*.....RH70 ONLY.....
4349 *****
4350 026524 000004 TST40: SCOPE
4351 026526 005701 TST R1 ;IS IN AN RH11
4352 026530 100532 BMI TST41 ;;GET OUT OF TEST
4353 026532 012777 177776 154572 MOV 2-2,2RHWC ;SET UP WC FOR TWO WORD
4354 026540 012777 004000 154566 MOV 2EVENAD,2RHBA ;SETUP BUS ADDRESS
4355 026546 012777 000000 154604 MOV 2ZERO,2RHBAE ;SETUP BUS ADDRESS EXTENSION
4356 026554 012777 000017 154556 MOV 27BAI,2RHCS2 ;DEVICE 7
4357 026562 012777 000067 154540 MOV 2WRITE6,2RHCS1 ;TELL IT TO WRITE6
4358 026570 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
4359 026574 032777 000200 154526 18$: BIT 2RDY,2RHCS1 ;IS RDY SET
4360 026602 001015 BNE 3$ ;BIT IS SET
4361 026604 005237 003446 INC BITCNT ;COUNT UP
4362 026610 001371 BNE 18$ ;NOT FINISHED COUNTING
4363 026612 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
4364 026616 032777 000200 154504 19$: BIT 2RDY,2RHCS1 ;IS IT SET YET?
4365 026624 001004 BNE 3$ ;YES
4366 026626 005237 003446 INC BITCNT ;COUNT UP
4367 026632 001401 BEQ 3$ ;BIT IS NOT GOING TO SET
4368 026634 000770 BR 19$
4369 3$:
4370 026636 017737 154466 003420 MOV 2RHCS1,CS1 ;SAVE RHCS1
4371 026644 017737 154462 003444 MOV 2RHWC,WC ;SAVE WORD COUNT
4372 026652 017737 154456 003414 MOV 2RHBA,BA ;SAVE BUS ADDRESS
4373 026660 005701 TST R1 ;IS IT AN RH11
4374 026662 001406 BEQ 87$ ;NO IT'S A 70
4375 026664 005037 003416 CLR BAE ;CLEAR BAE
4376 026670 005037 003424 CLR CS3 ;CLEAR CS3
4377 026674 000137 026714 JMP 86$ ;CONTINUE
4378 026700 017737 154454 003416 87$: MOV 2RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4379 026706 017737 154450 003424 86$: MOV 2RHCS3,CS3 ;SAVE RHCS3
4380 026714 017737 154420 003422 MOV 2RHCS2,CS2 ;SAVE CS2

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G07

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 85
 DZRHBC.P11 T40 DBL TEST 2 WORD TRANSFER WITH BAI AND WRITE REV

4381	026722	017737	154414	003432	MOV	DRHST,DS1	:SAVE TESTER STATUS
4382	026730	017737	154410	003436	MOV	DRHER,ERI	:SAVE ERROR REGISTER
4383	026736	017737	154406	003442	MOV	DRHTDB,TDR	:SAVE TESTER DATA REG.
4384	026744	017737	154366	003440	MOV	DRHMR2,TC	:SAVE MR2 TESTER REG.
4385	026752	032777	000200	154350	BIT	RDY,DRHCS1	:IS READY SET
4386	026760	001003			BNE	15	:RDY SET CONT. TEST
4387	026762	104102			ERROR	102	:READY DID NOT SET
4388	026764	004737	007234		JSR	R7,WHYFO	:ANY ERRORS SET
4389	026770	032777	002000	154364	BIT	DBL,DRHCS3	:IS DOUBLE SET
4390	026776	001403			BEQ	25	:DBL SET
4391	027000	104155			ERROR	155	:DBL DID SET ON A 2 WORD TRANSFER
4392	027002	004737	007234		JSR	R7,WHYFO	:TELL WHY NOT
4393	027006	004737	006602		JSR	R7,CLEER	:CLEAR ERRORS
4394	027012	004737	050130		JSR	R7,ERRST	
4395							
4396							
4397							
4398							
4399							
4400							
4401							
4402							
4403	027016	000004					
4404	027020	005701					
4405	027022	100532					
4406	027024	012777	177776	154300	MOV	#-2,DRHWC	:SET UP WC FOR TWO WORD
4407	027032	012777	004002	154274	MOV	#ODDAD,DRHBA	:SETUP BUS ADDRESS
4408	027040	012777	000000	154312	MOV	#ZERO,DRHBAE	:SETUP BUS ADDRESS EXTENSION
4409	027046	012777	000007	154264	MOV	#7,DRHCS2	:DEVICE 7
4410	027054	012777	000061	154246	MOV	#WRITED,DRHCS1	:TELL IT TO WRITED
4411	027062	005037	003446		CLR	BITCNT	:CLEAR BIT COUNTER
4412	027066	032777	000200	154234	BIT	RDY,DRHCS1	:IS RDY SET
4413	027074	001015			BNE	35	:BIT IS SET
4414	027076	005237	003446		INC	BITCNT	:COUNT UP
4415	027102	001371			BNE	185	:NOT FINISHED COUNTING
4416	027104	005037	003446		CLR	BITCNT	:GET READY TO DO IT AGAIN
4417	027110	032777	000200	154212	BIT	RDY,DRHCS1	:IS IT SET YET?
4418	027116	001004			BNE	35	:YES
4419	027120	005237	003446		INC	BITCNT	:COUNT UP
4420	027124	001401			BEQ	35	:BIT IS NOT GOING TO SET
4421	027126	000770			BR	195	
4422	027130						
4423	027130	017737	154174	003420	MOV	DRHCS1,CS1	:SAVE RHCS1
4424	027136	017737	154170	003444	MOV	DRHWC,WC	:SAVE WORD COUNT
4425	027144	017737	154164	003414	MOV	DRHBA,BA	:SAVE BUS ADDRESS
4426	027152	005701			TST	R1	:IS IT AN RH11
4427	027154	001406			BEQ	875	:NO IT'S A 70
4428	027156	005037	003416		CLR	BAE	:CLEAR BAE
4429	027162	005037	003424		CLR	CS3	:CLEAR CS3
4430	027166	000137	027206		JMP	865	:CONTINUE
4431	027172	017737	154162	003416	MOV	DRHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
4432	027200	017737	154156	003424	MOV	DRHCS3,CS3	:SAVE RHCS3
4433	027206	017737	154126	003422	MOV	DRHCS2,CS2	:SAVE CS2
4434	027214	017737	154122	003432	MOV	DRHST,DS1	:SAVE TESTER STATUS
4435	027222	017737	154116	003436	MOV	DRHER,ERI	:SAVE ERROR REGISTER
4436	027230	017737	154114	003442	MOV	DRHTDB,TDR	:SAVE TESTER DATA REG.

*TEST 41 DBL TEST 2 WORD TRANSFER ODD ADD.
 *THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
 *WRITE FWD AND REV AND WITH BAI SET IN RHCS2
 *OPERATION BEING PERFORMED WILL BE PRINTED OUT
 *IN ERROR MESSAGE.

***** RH70 ONLY *****

TST41: SCOPE
 TST R1 :IS IN AN RH11
 BMI TST42 ;;GET OUT OF TEST
 MOV #2,DRHWC :SET UP WC FOR TWO WORD
 MOV #ODDAD,DRHBA :SETUP BUS ADDRESS
 MOV #ZERO,DRHBAE :SETUP BUS ADDRESS EXTENSION
 MOV #7,DRHCS2 :DEVICE 7
 MOV #WRITED,DRHCS1 :TELL IT TO WRITED
 CLR BITCNT :CLEAR BIT COUNTER
 BIT RDY,DRHCS1 :IS RDY SET
 BNE 35 :BIT IS SET
 INC BITCNT :COUNT UP
 BNE 185 :NOT FINISHED COUNTING
 CLR BITCNT :GET READY TO DO IT AGAIN
 BIT RDY,DRHCS1 :IS IT SET YET?
 BNE 35 :YES
 INC BITCNT :COUNT UP
 BEQ 35 :BIT IS NOT GOING TO SET
 BR 195

35:
 MOV DRHCS1,CS1 :SAVE RHCS1
 MOV DRHWC,WC :SAVE WORD COUNT
 MOV DRHBA,BA :SAVE BUS ADDRESS
 TST R1 :IS IT AN RH11
 BEQ 875 :NO IT'S A 70
 CLR BAE :CLEAR BAE
 CLR CS3 :CLEAR CS3
 JMP 865 :CONTINUE
 MOV DRHBAE,BAE :SAVE BUS ADDRESS EXTENSION
 MOV DRHCS3,CS3 :SAVE RHCS3
 MOV DRHCS2,CS2 :SAVE CS2
 MOV DRHST,DS1 :SAVE TESTER STATUS
 MOV DRHER,ERI :SAVE ERROR REGISTER
 MOV DRHTDB,TDR :SAVE TESTER DATA REG.

H07

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 86
 DZRHBC.P11 T41 DBL TEST 2 WORD TRANSFER ODD ADD.

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4437 027236 017737 154074 003440      MOV      2RHMR2,TC      ;SAVE MR2 TESTER REG.
4438 027244 032777 000200 154056      BIT      2RDY,2RHCS1    ;IS READY SET
4439 027252 001003          BNE      15      ;RDY SET CONT. TEST
4440 027254 104102          ERROR    102      ;READY DID NOT SET
4441 027256 004737 007234          JSR      R7,WHYFO      ;ANY ERRORS SET
4442 027262 032777 002000 154072 15:   BIT      2DBL,2RHCS3    ;IS DOUBLE SET
4443 027270 001403          BEQ      25      ;DBL SET
4444 027272 104156          ERROR    156      ;DBL DID SET ON A 2 WORD TRANSFER
4445 027274 004737 007234          JSR      R7,WHYFO      ;TELL WHY NOT
4446 027300 004737 006602 25:         JSR      R7,CLEER      ;CLEAR ERRORS
4447 027304 004737 050130          JSR      R7,ERRST
4448
4449      ;*****
4450      ;*TEST 42 DBL TEST EVEN ADD. WRITE FWD
4451      ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4452      ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4453      ;*OPERATION BEING PERFORMED WILL BE PRINTED OUT
4454      ;*IN ERROR MESSAGE.
4455      ;*.....RH70 ONLY.....
4456      ;*****
4457      ;TST42: SCOPE
4458      ;TST      R1
4459      ;BMI      TST43      ;:GET OUT OF TEST
4460      ;MOV      2-2,2RHWC      ;SET UP WC FOR TWO WORD
4461      ;MOV      2EVENAD,2RHBA    ;SETUP BUS ADDRESS
4462      ;MOV      2ZERO,2RHBAE     ;SETUP BUS ADDRESS EXTENSION
4463      ;MOV      27,2RHCS2      ;DEVICE 7
4464      ;MOV      2WRITE6,2RHCS1   ;TELL IT TO WRITE6
4465      ;CLR      BITCNT          ;CLEAR BIT COUNTER
4466      ;BIT      2RDY,2RHCS1     ;IS RDY SET
4467      ;BNE      35             ;BIT IS SET
4468      ;INC      BITCNT          ;COUNT UP
4469      ;BNE      185            ;NOT FINISHED COUNTING
4470      ;CLR      BITCNT          ;GET READY TO DO IT AGAIN
4471      ;BIT      2RDY,2RHCS1     ;IS IT SET YET?
4472      ;BNE      35             ;YES
4473      ;INC      BITCNT          ;COUNT UP
4474      ;BEQ      35             ;BIT IS NOT GOING TO SET
4475      ;BR       195
4476      ;35:
4477      ;MOV      2RHCS1,CS1      ;SAVE RHCS1
4478      ;MOV      2RHWC,WC        ;SAVE WORD COUNT
4479      ;MOV      2RHBA,BA        ;SAVE BUS ADDRESS
4480      ;TST      R1              ;IS IT AN RH11
4481      ;BEQ      87$            ;NO IT'S A 70
4482      ;CLR      BAE             ;CLEAR BAE
4483      ;CLR      CS3            ;CLEAR CS3
4484      ;JMP      86$            ;CONTINUE
4485      ;MOV      2RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
4486      ;MOV      2RHCS3,CS3      ;SAVE RHCS3
4487      ;MOV      2RHCS2,CS2      ;SAVE CS2
4488      ;MOV      2RHST,DS1       ;SAVE TESTER STATUS
4489      ;MOV      2RHER,ER1       ;SAVE ERROR REGISTER
4490      ;MOV      2RH7DB,TD0      ;SAVE TESTER DATA REG.
4491      ;MOV      2RHMR2,TC       ;SAVE MR2 TESTER REG.
4492      ;BIT      2RDY,2RHCS1     ;IS READY SET
4493      ;BNE      15              ;RDY SET CONT. TEST

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4493 027546 104102          ERROR 102          ;READY DID NOT SET
4494 027550 004737 007234    JSR      R7,WHYFO    ;ANY ERRORS SET
4495 027554 032777 002000 153600 15:  BIT      #DBL,2RHCS3    ;IS DOUBLE SET
4496 027562 001403          BEQ      25          ;DBL SET
4497 027564 104157          ERROR 157          ;DBL DID SET ON A 2 WORD TRANSFER
4498 027566 004737 007234    JSR      R7,WHYFO    ;TELL WHY NOT
4499 027572 004737 006602 25:  JSR      R7,CLEER    ;CLEAR ERRORS
4500 027576 004737 050130    JSR      R7,ERRTST
4501          ;*****
4502          ;*TEST 43 DBL TEST 2 WORD ODD ADD. WRITE REV
4503          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4504          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4505          ;*OPERATION BEING PERFORMED WILL BE PRINTED OUT
4506          ;*IN ERROR MESSAGE.
4507          ;*.....RH70 ONLY.....
4508          ;*****
4509 027602 000004          †T43: SCOPE
4510 027604 005701          TST      R1          ;IS IN AN RH11
4511 027606 100532          BMI      TST44          ;;GET OUT OF TEST
4512 027610 012777 177776 153514    MOV      #2,2RHWC    ;SET UP WC FOR TWO WORD
4513 027616 012777 004002 153510    MOV      #000AD,2RHBA    ;SETUP BUS ADDRESS
4514 027624 012777 000000 153526    MOV      #ZERO,2RHBAE    ;SETUP BUS ADDRESS EXTENSION
4515 027632 012777 000007 153500    MOV      #7,2RHCS2    ;DEVICE 7
4516 027640 012777 000067 153462    MOV      #WRITE6,2RHCS1 ;TELL IT TO WRITE6
4517 027646 005037 003446          CLR      BITCNT    ;CLEAR BIT COUNTER
4518 027652 032777 000200 153450 185: BIT      #RDY,2RHCS1 ;IS RDY SET
4519 027660 001015          BNE      35          ;BIT IS SET
4520 027662 005237 003446          INC      BITCNT    ;COUNT UP
4521 027666 001371          BNE      185          ;NOT FINISHED COUNTING
4522 027670 005037 003446          CLR      BITCNT    ;GET READY TO DO IT AGAIN
4523 027674 032777 000200 153426 195: BIT      #RDY,2RHCS1 ;IS IT SET YET?
4524 027702 001004          BNE      35          ;YES
4525 027704 005237 003446          INC      BITCNT    ;COUNT UP
4526 027710 001401          BEQ      35          ;BIT IS NOT GOING TO SET
4527 027712 000770          BR       195
4528 027714          35:
4529 027714 017737 153410 003420    MOV      2RHCS1,CS1    ;SAVE RHCS1
4530 027722 017737 153404 003444    MOV      2RHWC,WC    ;SAVE WORD COUNT
4531 027730 017737 153400 003414    MOV      2RHBA,BA    ;SAVE BUS ADDRESS
4532 027736 005701          TST      R1          ;IS IT AN RH11
4533 027740 001406          BEQ      875          ;NO IT'S A 70
4534 027742 005037 003416          CLR      BAE      ;CLEAR BAE
4535 027746 005037 003424          CLR      CS3     ;CLEAR CS3
4536 027752 000137 027772          JMP      865          ;CONTINUE
4537 027756 017737 153376 003416 875: MOV      2RHBAE,BAE    ;SAVE BUS ADDRESS EXTENSION
4538 027764 017737 153372 003424    MOV      2RHCS3,CS3    ;SAVE RHCS3
4539 027772 017737 153342 003422 865: MOV      2RHCS2,CS2    ;SAVE CS2
4540 030000 017737 153336 003432    MOV      2RHST,DS1    ;SAVE TESTER STATUS
4541 030006 017737 153332 003436    MOV      2RHER,ER1    ;SAVE ERROR REGISTER
4542 030014 017737 153330 003442    MOV      2RHDOB,TDR    ;SAVE TESTER DATA REG.
4543 030022 017737 153310 003440    MOV      2RHMR2,TC    ;SAVE MR2 TESTER REG.
4544 030030 032777 000200 153272    BIT      #RDY,2RHCS1 ;IS READY SET
4545 030036 001003          BNE      15          ;RDY SET CONT. TEST
4546 030040 104102          ERROR 102          ;READY DID NOT SET
4547 030042 004737 007234    JSR      R7,WHYFO    ;ANY ERRORS SET
4548 030046 032777 002000 153306 15:  BIT      #DBL,2RHCS3    ;IS DOUBLE SET

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J07

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 T43 DBL TEST 2 WORDMACY11 27(732) 01-OCT-76 09:03 PAGE 88
ODD ADD. WRITE REV

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4549 030054 001003 BNE 2$ ;DBL SET
4550 030056 104160 ERROR 160 ;DBL DIDN'T SET ON A 2 WORD TRANSFER
4551 030060 004737 007234 JSR R7,WHYFO ;TELL WHY NOT
4552 030064 004737 006602 2$: JSR R7,CLEER ;CLEAR ERRORS
4553 030070 004737 050130 JSR R7,ERRST
4554 *****
4555 ;*TEST 44 DBL TEST 3 WORD ODD ADD. WRITE REV
4556 ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4557 ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4558 ;*OPERATION BEING PERFORMED WILL BE PRINTED OUT
4559 ;*IN ERROR MESSAGE.
4560 *****
4561 ;*****RH70 ONLY*****
4562 030074 000004 TST44: SCOPE
4563 030076 005701 TST R1 ;IS IN AN RH11
4564 030100 100532 BMI TST45 ;;GET OUT OF TEST
4565 030102 012777 177775 153222 MOV #3,ARHWC ;SET UP WC FOR THREE WORD
4566 030110 012777 004002 153216 MOV #000AD,ARHBA ;SETUP BUS ADDRESS
4567 030116 012777 000000 153234 MOV #ZERO,ARHBAE ;SETUP BUS ADDRESS EXTENSION
4568 030124 012777 000007 153206 MOV #7,ARHCS2 ;DEVICE 7
4569 030132 012777 000067 153170 MOV #WRITE6,ARHCS1 ;TELL IT TO WRITE6
4570 030140 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
4571 030144 032777 000200 153156 18$: BIT #RDY,ARHCS1 ;IS RDY SET
4572 030152 001015 BNE 3$ ;BIT IS SET
4573 030154 005237 003446 INC BITCNT ;COUNT UP
4574 030160 001371 BNE 18$ ;NOT FINISHED COUNTING
4575 030162 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
4576 030166 032777 000200 153134 19$: BIT #RDY,ARHCS1 ;IS IT SET YET?
4577 030174 001004 BNE 3$ ;YES
4578 030176 005237 003446 INC BITCNT ;COUNT UP
4579 030202 001401 BEQ 3$ ;BIT IS NOT GOING TO SET
4580 030204 000770 BR 19$
4581 030206 3$:
4582 030206 017737 153116 003420 MOV ARHCS1,CS1 ;SAVE RHCS1
4583 030214 017737 153112 003444 MOV ARHWC,WC ;SAVE WORD COUNT
4584 030222 017737 153106 003414 MOV ARHBA,BA ;SAVE BUS ADDRESS
4585 030230 005701 TST R1 ;IS IT AN RH11
4586 030232 001406 BEQ 87$ ;NO IT'S A 70
4587 030234 005037 003416 CLR BAE ;CLEAR BAE
4588 030240 005037 003424 CLR CS3 ;CLEAR CS3
4589 030244 000137 030264 JMP 86$ ;CONTINUE
4590 030250 017737 153104 003416 87$: MOV ARHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4591 030256 017737 153100 003424 MOV ARHCS3,CS3 ;SAVE RHCS3
4592 030264 017737 153050 003422 86$: MOV ARHCS2,CS2 ;SAVE CS2
4593 030272 017737 153044 003432 MOV ARHST,OS1 ;SAVE TESTER STATUS
4594 030300 017737 153040 003436 MOV ARHER,ER1 ;SAVE ERROR REGISTER
4595 030306 017737 153036 003442 MOV ARHTDB,TDR ;SAVE TESTER DATA REG.
4596 030314 017737 153016 003440 MOV ARHMR2,TC ;SAVE MR2 TESTER REG.
4597 030322 032777 000200 153000 BIT #RDY,ARHCS1 ;IS READY SET
4598 030330 001003 BNE 1$ ;RDY SET CONT. TEST
4599 030332 104102 ERROR 102 ;READY DID NOT SET
4600 030334 004737 007234 JSR R7,WHYFO ;ANY ERRORS SET
4601 030340 032777 002000 153014 1$: BIT #DBL,ARHCS3 ;IS DOUBLE SET
4602 030346 001403 BEQ 2$ ;DBL SET
4603 030350 104161 ERROR 161 ;DBL DID SET ON A 3 WORD TRANSFER
4604 030352 004737 007234 JSR R7,WHYFO ;TELL WHY NOT

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K07

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 T44 DBL TEST 3 WORDMACY11 27(732) 01-OCT-76 09:03 PAGE 89
ODD ADD. WRITE REV

4605 030356 004737 006602
 4606 030362 004737 050130
 4607
 4608
 4609
 4610
 4611
 4612
 4613
 4614
 4615 030366 000004
 4616 030370 005701
 4617 030372 100532
 4618 030374 012777 177776 152730
 4619 030402 012777 004000 152724
 4620 030410 012777 000000 152742
 4621 030416 012777 000007 152714
 4622 030424 012777 000071 152676
 4623 030432 005037 003446
 4624 030436 032777 000200 152664 185:
 4625 030444 001015
 4626 030446 005237 003446
 4627 030452 001371
 4628 030454 005037 003446
 4629 030460 032777 000200 152642 195:
 4630 030466 001004
 4631 030470 005237 003446
 4632 030474 001401
 4633 030476 000770
 4634 030500
 4635 030500 017737 152624 003420
 4636 030506 017737 152620 003444
 4637 030514 017737 152614 003414
 4638 030522 005701
 4639 030524 001406
 4640 030526 005037 003416
 4641 030532 005037 003424
 4642 030536 000137 030556
 4643 030542 017737 152612 003416 875:
 4644 030550 017737 152606 003424
 4645 030556 017737 152556 003422 865:
 4646 030564 017737 152552 003432
 4647 030572 017737 152546 003436
 4648 030600 017737 152544 003442
 4649 030606 017737 152524 003440
 4650 030614 032777 000200 152506
 4651 030622 001003
 4652 030624 104102
 4653 030626 004737 007234
 4654 030632 032777 002000 152522 15:
 4655 030640 001003
 4656 030642 104162
 4657 030644 004737 007234
 4658 030650 004737 006602
 4659 030654 004737 050130
 4660

```

25: JSR R7,CLEER ;CLEAR ERRORS
JSR R7,ERRTST
;*****
;TEST 45 DBL TEST 2 WORD READ FWD
;THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
;WRITE FWD AND REV AND WITH BAI SET IN RHCS2
;OPERATION BEING PREFORMED WILL BE PRINTED OUT
;IN ERROR MESSAGE.
;.....RH70 ONLY.....
;*****
15T45: SCOPE
TST R1 ;IS IN AN RH11
BMI TST46 ;;GET OUT OF TEST
MOV #2,2RHWC ;SET UP WC FOR TWO WORD
MOV #EVENAD,2RHBA ;SETUP BUS ADDRESS
MOV #ZERO,2RHBAE ;SETUP BUS ADDRESS EXTENSION
MOV #7,2RHCS2 ;DEVICE 7
MOV #READO,2RHCS1 ;TELL IT TO READO
CLR BITCNT ;CLEAR BIT COUNTER
BIT #RDY,2RHCS1 ;IS RDY SET
BNE 35 ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 185 ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
BIT #RDY,2RHCS1 ;IS IT SET YET?
BNE 35 ;YES
INC BITCNT ;COUNT UP
BEQ 35 ;BIT IS NOT GOING TO SET
BR 195

35: MOV 2RHCS1,CS1 ;SAVE RHCS1
MOV 2RHWC,WC ;SAVE WORD COUNT
MOV 2RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 875 ;NO IT'S A 70
CLR BAE ;CLEAR BAE
CLR CS3 ;CLEAR CS3
JMP 865 ;CONTINUE
MOV 2RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
MOV 2RHCS3,CS3 ;SAVE RHCS3
MOV 2RHCS2,CS2 ;SAVE CS2
MOV 2RHST,DS1 ;SAVE TESTER STATUS
MOV 2RHER,ER1 ;SAVE ERROR REGISTER
MOV 2RHTD8,TDR ;SAVE TESTER DATA REG.
MOV 2RHMR2,TC ;SAVE MR2 TESTER REG.
BIT #RDY,2RHCS1 ;IS READY SET
BNE 15 ;RDY SET CONT. TEST
ERROR 102 ;READY DID NOT SET
JSR R7,WHYFO ;ANY ERRORS SET
BIT #DBL,2RHCS3 ;IS DOUBLE SET
BNE 25 ;DBL SET
ERROR 162 ;DBL DIDN'T SET ON A 2 WORD TRANSFER
JSR R7,WHYFO ;TELL WHY NOT
25: JSR R7,CLEER ;CLEAR ERRORS
JSR R7,ERRTST
;*****

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L07

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 90
DZRHBC.P11 T46 DBL TEST 2 WORD ODD ADD. READ FWD

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4661
4662
4663
4664
4665
4666
4667
4668 030660 000004
4669 030662 005701
4670 030664 100532
4671 030666 012777 177776 152436
4672 030674 012777 004002 152432
4673 030702 012777 000000 152450
4674 030710 012777 000007 152422
4675 030716 012777 000071 152404
4676 030724 005037 003446
4677 030730 032777 000200 152372 18$:
4678 030736 001015
4679 030740 005237 003446
4680 030744 001371
4681 030746 005037 003446
4682 030752 032777 000200 152350 19$:
4683 030760 001004
4684 030762 005237 003446
4685 030766 001401
4686 030770 000770
4687 030772
4688 030772 017737 152332 003420 3$:
4689 031000 017737 152326 003444
4690 031006 017737 152322 003414
4691 031014 005701
4692 031016 001406
4693 031020 005037 003416
4694 031024 005037 003424
4695 031030 000137 031050
4696 031034 017737 152320 003416 87$:
4697 031042 017737 152314 003424
4698 031050 017737 152264 003422 86$:
4699 031056 017737 152260 003432
4700 031064 017737 152254 003436
4701 031072 017737 152252 003442
4702 031100 017737 152232 003440
4703 031106 032777 000200 152214
4704 031114 001003
4705 031116 104102
4706 031120 004737 007234
4707 031124 032777 002000 152230 1$:
4708 031132 001403
4709 031134 104163
4710 031136 004737 007234
4711 031142 004737 006602
4712 031146 004737 050130
4713
4714
4715
4716

; *TEST 46 DBL TEST 2 WORD ODD ADD. READ FWD
; *THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
; *WRITE FWD AND REV AND WITH BAI SET IN RHCS2
; *OPERATION BEING PERFORMED WILL BE PRINTED OUT
; *IN ERROR MESSAGE.
; *.....RH70 ONLY.....
; *****
TST46: SCOPE
TEST R1
BMI TST47 ;;GET OUT OF TEST
MOV #2, ARHWC ;SET UP WC FOR TWO WORD
MOV #ODDAD, ARHBA ;SETUP BUS ADDRESS
MOV #ZERO, ARHBAE ;SETUP BUS ADDRESS EXTENSION
MOV #7, ARHCS2 ;DEVICE 7
MOV #READO, ARHCS1 ;TELL IT TO READO
CLR BITCNT ;CLEAR BIT COUNTER
BIT #RDY, ARHCS1 ;IS RDY SET
BNE 3$ ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
BIT #RDY, ARHCS1 ;IS IT SET YET?
BNE 3$ ;YES
INC BITCNT ;COUNT UP
BEQ 3$ ;BIT IS NOT GOING TO SET
BR 19$

3$: MOV ARHCS1, CS1 ;SAVE RHCS1
MOV ARHWC, WC ;SAVE WORD COUNT
MOV ARHBA, BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87$ ;NO IT'S A 70
CLR BAE ;CLEAR BAE
CLR CS3 ;CLEAR CS3
JMP 86$ ;CONTINUE
87$: MOV ARHBAE, BAE ;SAVE BUS ADDRESS EXTENSION
MOV ARHCS3, CS3 ;SAVE RHCS3
86$: MOV ARHCS2, CS2 ;SAVE CS2
MOV ARHST, DS1 ;SAVE TESTER STATUS
MOV ARHER, ER1 ;SAVE ERROR REGISTER
MOV ARHTDB, TDR ;SAVE TESTER DATA REG.
MOV ARHMR2, TC ;SAVE MR2 TESTER REG.
BIT #RDY, ARHCS1 ;IS READY SET
BNE 1$ ;RDY SET CONT. TEST
ERROR 102 ;READY DID NOT SET
JSR R7, WHYFO ;ANY ERRORS SET
BIT #DBL, ARHCS3 ;IS DOUBLE SET
BEQ 2$ ;DBL SET
ERROR 163 ;DBL DID SET ON A 2 WORD TRANSFER
JSR R7, WHYFO ;TELL WHY NOT
JSR R7, CLEAR ;CLEAR ERRORS
JSR R7, EARTST

; *****
; *TEST 47 DBL TEST 2 WORD EVEN ADD. READ REV
; *THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
; *WRITE FWD AND REV AND WITH BAI SET IN RHCS2

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MO7

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 91
DZRHBC.P11 T47 DBL TEST 2 WORD EVEN ADD. READ REV

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4717                                     ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4718                                     ;*IN ERROR MESSAGE.
4719                                     ;*.....RH70 ONLY.....
4720                                     ;*****
4721 031152 000004 TST47: SCOPE
4722 031154 005701 TST R1                                     ;IS IN AN RH11
4723 031156 100532 BMI TST50                               ;;GET OUT OF TEST
4724 031160 012777 177776 152144 MOV #-2, JRHWC           ;SET UP WC FOR TWO WORD
4725 031166 012777 004000 152140 MOV #EVENAD, JRHBA       ;SETUP BUS ADDRESS
4726 031174 012777 000000 152156 MOV #ZERO, JRHBAE        ;SETUP BUS ADDRESS EXTENSION
4727 031202 012777 000007 152130 MOV #7, JRHCS2          ;DEVICE 7
4728 031210 012777 000077 152112 MOV #READ6, JRHCS1      ;TELL IT TO READ6
4729 031216 005037 003446 CLR BITCNT                     ;CLEAR BIT COUNTER
4730 031222 032777 000200 152100 18$: BIT #RDY, JRHCS1    ;IS RDY SET
4731 031230 001015 BNE 3$                                ;BIT IS SET
4732 031232 005237 003446 INC BITCNT                     ;COUNT UP
4733 031236 001371 BNE 18$                                ;NOT FINISHED COUNTING
4734 031240 005037 003446 CLR BITCNT                     ;GET READY TO DO IT AGAIN
4735 031244 032777 000200 152056 19$: BIT #RDY, JRHCS1  ;IS IT SET YET?
4736 031252 001004 BNE 3$                                ;YES
4737 031254 005237 003446 INC BITCNT                     ;COUNT UP
4738 031260 001401 BEQ 3$                                ;BIT IS NOT GOING TO SET
4739 031262 000770 BR 19$
4740 031264 3$:
4741 031264 017737 152040 003420 MOV JRHCS1, CS1         ;SAVE RHCS1
4742 031272 017737 152034 003444 MOV JRHWC, WC          ;SAVE WORD COUNT
4743 031300 017737 152030 003414 MOV JRHBA, BA          ;SAVE BUS ADDRESS
4744 031306 005701 TST R1                                ;IS IT AN RH11
4745 031310 001406 BEQ 87$                               ;NO IT'S A 70
4746 031312 005037 003416 CLR BAE                       ;CLEAR BAE
4747 031316 005037 003424 CLR CS3                       ;CLEAR CS3
4748 031322 000137 031342 JMP 86$                       ;CONTINUE
4749 031326 017737 152026 003416 87$: MOV JRHBAE, BAE    ;SAVE BUS ADDRESS EXTENSION
4750 031334 017737 152022 003424 MOV JRHCS3, CS3        ;SAVE RHCS3
4751 031342 017737 151772 003422 86$: MOV JRHCS2, CS2    ;SAVE CS2
4752 031350 017737 151766 003432 MOV JRHST, DS1        ;SAVE TESTER STATUS
4753 031356 017737 151762 003436 MOV JRHER, ER1        ;SAVE ERROR REGISTER
4754 031364 017737 151760 003442 MOV JRHTD8, TDR       ;SAVE TESTER DATA REG.
4755 031372 017737 151740 003440 MOV JRHMR2, TC        ;SAVE MR2 TESTER REG.
4756 031400 032777 000200 151722 BIT #RDY, JRHCS1      ;IS READY SET
4757 031406 001003 BNE 1$                                ;RDY SET CONT. TEST
4758 031410 104102 ERROR 102                            ;READY DID NOT SET
4759 031412 004737 007234 JSR R7, WHYFO                ;ANY ERRORS SET
4760 031416 032777 002000 151736 1$: BIT #DBL, JRHCS3  ;IS DOUBLE SET
4761 031424 001403 BEQ 2$                                ;DBL SET
4762 031426 104164 ERROR 164                            ;DBL DID SET ON A 2 WORD TRANSFER
4763 031430 004737 007234 JSR R7, WHYFO                ;TELL WHY NOT
4764 031434 004737 006602 JSR R7, CLEAR              ;CLEAR ERRORS
4765 031440 004737 050130 JSR R7, EARTST
4766                                     ;*****
4767 ;*TEST 50 DBL TEST 2 WORD ODD ADD. READ REV
4768 ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4769 ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4770 ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4771 ;*IN ERROR MESSAGE.
4772 ;*.....RH70 ONLY.....

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4773
4774 031444 000004
4775 031446 005701
4776 031450 100532
4777 031452 012777 177776 151652
4778 031460 012777 004002 151646
4779 031466 012777 000000 151664
4780 031474 012777 000007 151636
4781 031502 012777 000077 151620
4782 031510 005037 003446
4783 031514 032777 000200 151606 18$:
4784 031522 001015
4785 031524 005237 003446
4786 031530 001371
4787 031532 005037 003446
4788 031536 032777 000200 151564 19$:
4789 031544 001004
4790 031546 005237 003446
4791 031552 001401
4792 031554 000770
4793 031556
4794 031556 017737 151546 003420 3$:
4795 031564 017737 151542 003444
4796 031572 017737 151536 003414
4797 031600 005701
4798 031602 001406
4799 031604 005037 003416
4800 031610 005037 003424
4801 031614 000137 003634
4802 031620 017737 151534 003416 87$:
4803 031626 017737 151530 003424
4804 031634 017737 151500 003422 86$:
4805 031642 017737 151474 003432
4806 031650 017737 151470 003436
4807 031656 017737 151466 003442
4808 031664 017737 151446 003440
4809 031672 032777 000200 151430
4810 031700 001003
4811 031702 104102
4812 031704 004737 007234
4813 031710 032777 002000 151444 1$:
4814 031716 001003
4815 031720 104165
4816 031722 004737 007234
4817 031726 004737 006602 2$:
4818 031732 004737 050130
4819
4820
4821
4822
4823
4824
4825
4826
4827 031736 000004
4828 031740 005701

*****
TST50: SCOPE R1
TST R1 ;IS IN AN RH11
BMI TST51 ;;GET OUT OF TEST
MOV #2, ARHWC ;SET UP WC FOR TWO WORD
MOV #ODDAD, ARHBA ;SETUP BUS ADDRESS
MOV #ZERO, ARHBAE ;SETUP BUS ADDRESS EXTENSION
MOV #7, ARHCS2 ;DEVICE 7
MOV #READ6, ARHCS1 ;TELL IT TO READ6
CLR BITCNT ;CLEAR BIT COUNTER
BIT #RDY, ARHCS1 ;IS RDY SET
BNE 3$ ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
BIT #RDY, ARHCS1 ;IS IT SET YET?
BNE 3$ ;YES
INC BITCNT ;COUNT UP
BEQ 3$ ;BIT IS NOT GOING TO SET
BR 19$

3$: MOV ARHCS1, CS1 ;SAVE RHCS1
MOV ARHWC, WC ;SAVE WORD COUNT
MOV ARHBA, BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87$ ;NO IT'S A 70
CLR BAE ;CLEAR BAE
CLR CS3 ;CLEAR CS3
JMP 86$ ;CONTINUE
87$: MOV ARHBAE, BAE ;SAVE BUS ADDRESS EXTENSION
MOV ARHCS3, CS3 ;SAVE RHCS3
MOV ARHCS2, CS2 ;SAVE CS2
MOV ARHST, DS1 ;SAVE TESTER STATUS
MOV ARHER, ER1 ;SAVE ERROR REGISTER
MOV ARHTD8, TD8 ;SAVE TESTER DATA REG.
MOV ARHMR2, TC ;SAVE MR2 TESTER REG.
BIT #RDY, ARHCS1 ;IS READY SET
BNE 1$ ;RDY SET CONT. TEST
ERROR 102 ;READY DID NOT SET
JSR R7, WHYFO ;ANY ERRORS SET
BIT #DBL, ARHCS3 ;IS DOUBLE SET
BNE 2$ ;DBL SET
ERROR 165 ;DBL DIDN'T SET ON A 2 WORD TRANSFER
JSR R7, WHYFO ;TELL WHY NOT
JSR R7, CLEAR ;CLEAR ERRORS
JSR R7, ERRTST

*****
;TEST 51 DBL TEST 3 WORD EVEN ADD. READ FWD
;THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
;WRITE FWD AND REV AND WITH BAI SET IN RHCS2
;OPERATION BEING PERFORMED WILL BE PRINTED OUT
;IN ERROR MESSAGE.
;.....RH70 ONLY.....
*****
TST51: SCOPE R1
TST R1 ;IS IN AN RH11

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4829 031742 100532 BMI TST52 ::GET OUT OF TEST
4830 031744 017775 151360 MOV #-3,DRHWC :SET UP WC FOR THREE WORD
4831 031752 012777 004000 MOV #EVENAD,DRHBA :SETUP BUS ADDRESS
4832 031760 017777 000000 MOV #ZERO,DRHBAE :SETUP BUS ADDRESS EXTENSION
4833 031766 012777 000007 MOV #7,DRHCS2 :DEVICE 7
4834 031774 012777 000071 MOV #READD,DRHCS1 :TELL IT TO READD
4835 032002 005037 003446 CLR BITCNT :CLEAR BIT COUNTER
4836 032006 032777 000200 151314 18$: BIT #RDY,DRHCS1 :IS RDY SET
4837 032014 001015 BNE 3$ :BIT IS SET
4838 032016 005237 003446 INC BITCNT :COUNT UP
4839 032022 001371 BNE 18$ :NOT FINISHED COUNTING
4840 032024 005037 003446 CLR BITCNT :GET READY TO DO IT AGAIN
4841 032030 032777 000200 151272 19$: BIT #RDY,DRHCS1 :IS IT SET YET?
4842 032036 001004 BNE 3$ :YES
4843 032040 005237 003446 INC BITCNT :COUNT UP
4844 032044 001401 BEQ 3$ :BIT IS NOT GOING TO SET
4845 032046 000770 BR 19$
4846 032050 3$: MOV DRHCS1,CS1 :SAVE RHCS1
4847 032050 017737 151254 003420 MOV DRHWC,WC :SAVE WORD COUNT
4848 032056 017737 151250 003444 MOV DRHBA,BA :SAVE BUS ADDRESS
4849 032064 017737 151244 003414 TST R1 :IS IT AN RH1?
4850 032072 005701 BEQ 87$ :NO IT'S A 70
4851 032074 001406 CLR BAE :CLEAR BAE
4852 032076 005037 003416 CLR CS3 :CLEAR CS3
4853 032102 005037 003424 JMP 86$ :CONTINUE
4854 032106 000137 032126 87$: MOV DRHBAE,BAE :SAVE BUS ADDRESS EXTENSION
4855 032112 017737 151242 003416 MOV DRHCS3,CS3 :SAVE RHCS3
4856 032120 017737 151236 003424 86$: MOV DRHCS2,CS2 :SAVE CS2
4857 032126 017737 151206 003422 MOV DRHST,DS1 :SAVE TESTER STATUS
4858 032134 017737 151202 003432 MOV DRHER,ER1 :SAVE ERROR REGISTER
4859 032142 017737 151176 003436 MOV DRHTDB,TDR :SAVE TESTER DATA REG.
4860 032150 017737 151174 003442 MOV DRHMR2,TC :SAVE MR2 TESTER REG.
4861 032156 017737 151154 003440 BIT #RDY,DRHCS1 :IS READY SET
4862 032164 032777 000200 151136 BNE 1$ :RDY SET CONT. TEST
4863 032172 001003 ERROR 102 :READY DID NOT SET
4864 032174 104102 JSR R7,WHYFO :ANY ERRORS SET
4865 032176 004737 007234 151152 1$: BIT #DBL,DRHCS3 :IS DOUBLE SET
4866 032202 032777 002000 BEQ 2$ :DBL SET
4867 032210 001403 ERROR 166 :DBL DID SET ON A 3 WORD TRANSFER
4868 032212 104166 JSR R7,WHYFO :TELL WHY NOT
4869 032214 004737 007234 2$: JSR R7,CLEER :CLEAR ERRORS
4870 032220 004737 006602 JSR R7,ERRTST
4871 032224 004737 050130
4872 *****
4873 :*TEST 52 DBL TEST 3 WORD EVEN ADD. READ REV
4874 :*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4875 :*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4876 :*OPERATION BEING PERFORMED WILL BE PRINTED OUT
4877 :*IN ERROR MESSAGE.
4878 :*.....RH70 ONLY.....
4879 *****
4880 TST52: SCOPE
4881 TST R1 :IS IN AN RH11
4882 BMI TST53 ::GET OUT OF TEST
4883 MOV #-3,DRHWC :SET UP WC FOR THREE WORD
4884 MOV #EVENAD,DRHBA :SETUP BUS ADDRESS

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C08

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 94
 DZRHC.P11 TS2 DBL TEST 3 WORD EVEN ADD. READ REV

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4885 032252 012777 000000 151100      MOV      #ZERO,DRHBAE      ;SETUP BUS ADDRESS EXTENSION
4886 032260 012777 000007 151052      MOV      #7,DRHCS2      ;DEVICE 7
4887 032266 012777 000077 151034      MOV      #READ6,DRHCS1    ;TELL IT TO READ6
4888 032274 005037 003446              CLR      BITCNT          ;CLEAR BIT COUNTER
4889 032300 032777 000200 151022 18$:  BIT      #RDY,DRHCS1      ;IS RDY SET
4890 032306 001015              BNE      3$              ;BIT IS SET
4891 032310 005237 003446              INC      BITCNT          ;COUNT UP
4892 032314 001371              BNE      18$             ;NOT FINISHED COUNTING
4893 032316 005037 003446              CLR      BITCNT          ;GET READY TO DO IT AGAIN
4894 032322 032777 000200 151000 19$:  BIT      #RDY,DRHCS1      ;IS IT SET YET?
4895 032330 001004              BNE      3$              ;YES
4896 032332 005237 003446              INC      BITCNT          ;COUNT UP
4897 032336 001401              BEQ      3$              ;BIT IS NOT GOING TO SET
4898 032340 000770              BR       19$
4899 032342              3$:
4900 032342 017737 150762 003420      MOV      DRHCS1,CS1      ;SAVE RHCS1
4901 032350 017737 150756 003444      MOV      DRHWC,WC       ;SAVE WORD COUNT
4902 032356 017737 150752 003414      MOV      DRHBA,BA       ;SAVE BUS ADDRESS
4903 032364 005701              TST      R1              ;IS IT AN RH11
4904 032366 001406              BEQ      87$             ;NO IT'S A 70
4905 032370 005037 003416              CLR      BAE            ;CLEAR BAE
4906 032374 005037 003424              CLR      CS3            ;CLEAR CS3
4907 032400 000137 032420              JMP      86$            ;CONTINUE
4908 032404 017737 150750 003416 87$:  MOV      DRHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
4909 032412 017737 150744 003424      MOV      DRHCS3,CS3     ;SAVE RHCS3
4910 032420 017737 150714 003422 86$:  MOV      DRHCS2,CS2     ;SAVE CS2
4911 032426 017737 150710 003432      MOV      DRHST,DS1      ;SAVE TESTER STATUS
4912 032434 017737 150704 003436      MOV      DRHER,ER1      ;SAVE ERROR REGISTER
4913 032442 017737 150702 003442      MOV      DRHTDB,TDR     ;SAVE TESTER DATA REG.
4914 032450 017737 150662 003440      MOV      DRHMR2,TC      ;SAVE MR2 TESTER REG.
4915 032456 032777 000200 150644      BIT      #RDY,DRHCS1    ;IS READY SET
4916 032464 001003              BNE      1$             ;RDY SET CONT. TEST
4917 032466 104102              ERROR  102             ;READY DID NOT SET
4918 032470 004737 007234              JSR      R7,WHYFO        ;ANY ERRORS SET
4919 032474 032777 002000 150660 1$:  BIT      #DBL,DRHCS3      ;IS DOUBLE SET
4920 032502 001003              BNE      2$             ;DBL SET
4921 032504 104167              ERROR  167             ;DBL DIDN'T SET ON A 3 WORD TRANSFER
4922 032506 004737 007234              JSR      R7,WHYFO        ;TELL WHY NOT
4923 032512 004737 006602 2$:          JSR      R7,CLEER        ;CLEAR ERRORS
4924 032516 004737 050130              JSR      R7,ERRTST
4925 *****
4926 ;*TEST 53      WCE EW ERROR TEST
4927 ;*THIS TEST CHECKS THAT WCELO WILL SET IN
4928 ;*RHCS3 AND THAT WCE SETS IN RHCS1
4929 ;*IT ALSO CHECKS THAT WCEHI DOES NOT SET
4930 ;*WITH WCELO IN RHCS3.....
4931 ;*.....RH70 ONLY.....
4932 *****
4933 032522 000004      1$T53: SCOPE
4934 032524 012737 000001 001212      MOV      #1,STIMES      ;;DO 1 ITERATION
4935 032532 005701              TST      R1              ;IS IT AN RH11
4936 032534 001402              BEQ      1$             ;IT'S AN RH70
4937 032536 000137 033306              JMP      FANG            ;IT'S AN RH11, EXIT TEST
4938 032542 012777 000007 150570 1$:  MOV      #7,DRHCS2      ;SET DEVICE 7
4939 032550 012777 000000 150602      MOV      #ZERO,DRHBAE   ;SETUP BUS ADDRESS EXT.
4940 032556 012777 004000 150550      MOV      #EVENAD,DRHBA  ;SETUP BUS ADDRESS

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4941	032564	012777	177776	150540		MOV	#-2, 2RHWC	:FOR TWO WORD TRANSFER
4942	032572	012777	000061	150530		MOV	#WRITED, 2RHCS1	:TELL IT TO WRITE
4943	032600	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
4944	032604	032777	000200	150516	18\$:	BIT	#RDY, 2RHCS1	:IS RDY SET
4945	032612	001015				BNE	MITE	:BIT IS SET
4946	032614	005237	003446			INC	BITCNT	:COUNT UP
4947	032620	001371				BNE	18\$	:NOT FINISHED COUNTING
4948	032622	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
4949	032626	032777	000200	150474	19\$:	BIT	#RDY, 2RHCS1	:IS IT SET YET?
4950	032634	001004				BNE	MITE	:YES
4951	032636	005237	003446			INC	BITCNT	:COUNT UP
4952	032642	001401				BEQ	MITE	:BIT IS NOT GOING TO SET
4953	032644	000770				BR	19\$	
4954	032646				MITE:			
4955	032646	017737	150456	003420		MOV	2RHCS1, CS1	:SAVE RHCS1
4956	032654	017737	150452	003444		MOV	2RHWC, WC	:SAVE WORD COUNT
4957	032662	017737	150446	003414		MOV	2RHBA, BA	:SAVE BUS ADDRESS
4958	032670	005701				TST	R1	:IS IT AN RH11
4959	032672	001406				BEQ	87\$	:NO IT'S A 70
4960	032674	005037	003416			CLR	BAE	:CLEAR BAE
4961	032700	005037	003424			CLR	CS3	:CLEAR CS3
4962	032704	000137	032724			JMP	86\$	:CONTINUE
4963	032710	017737	150444	003416	87\$:	MOV	2RHBAE, BAE	:SAVE BUS ADDRESS EXTENSION
4964	032716	017737	150440	003424		MOV	2RHCS3, CS3	:SAVE RHCS3
4965	032724	017737	150410	003422	86\$:	MOV	2RHCS2, CS2	:SAVE CS2
4966	032732	017737	150404	003432		MOV	2RHST, DS1	:SAVE TESTER STATUS
4967	032740	017737	150400	003436		MOV	2RHER, ER1	:SAVE ERROR REGISTER
4968	032746	017737	150376	003442		MOV	2RHTD8, TDR	:SAVE TESTER DATA REG.
4969	032754	017737	150356	003440		MOV	2RHMR2, TC	:SAVE MR2 TESTER REG.
4970	032762	032777	000200	150340		BIT	#RDY, 2RHCS1	:IS READY SET
4971	032770	001003				BNE	VOUS	:RDY IS SET
4972	032772	104102				ERROR	102	:RDY DID NOT SET
4973	032774	004737	007234			JSR	R7, WHYFO	:ANY ERRORS SET
4974	033000	005137	004000		VOUS:	COM	EVENAD	:INVERT BITS FOR WCELO
4975	033004	012777	004000	150322		MOV	#EVENAD, 2RHBA	:FIX BUS ADDRESS
4976	033012	012777	177776	150312		MOV	#-2, 2RHWC	:FIX WORD COUNT
4977	033020	012777	000051	150302		MOV	#WRCHO, 2RHCS1	:TELL IT TO WRITE CHECK
4978	033026	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
4979	033032	032777	000200	150270	18\$:	BIT	#RDY, 2RHCS1	:IS RDY SET
4980	033040	001015				BNE	FAST	:BIT IS SET
4981	033042	005237	003446			INC	BITCNT	:COUNT UP
4982	033046	001371				BNE	18\$	:NOT FINISHED COUNTING
4983	033050	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
4984	033054	032777	000200	150246	19\$:	BIT	#RDY, 2RHCS1	:IS IT SET YET?
4985	033062	001004				BNE	FAST	:YES
4986	033064	005237	003446			INC	BITCNT	:COUNT UP
4987	033070	001401				BEQ	FAST	:BIT IS NOT GOING TO SET
4988	033072	000770				BR	19\$	
4989	033074				FAST:			
4990	033074	017737	150230	003420		MOV	2RHCS1, CS1	:SAVE RHCS1
4991	033102	017737	150224	003444		MOV	2RHWC, WC	:SAVE WORD COUNT
4992	033110	017737	150220	003414		MOV	2RHBA, BA	:SAVE BUS ADDRESS
4993	033116	005701				TST	R1	:IS IT AN RH11
4994	033120	001406				BEQ	87\$	:NO IT'S A 70
4995	033122	005037	003416			CLR	BAE	:CLEAR BAE
4996	033126	005037	003424			CLR	CS3	:CLEAR CS3

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4997 033132 000137 033152      JMP      86$      ;CONTINUE
4998 033136 017737 150216 003416 87$: MOV      2RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4999 033144 017737 150212 003424      MOV      2RHCS3,CS3 ;SAVE RHCS3
5000 033152 017737 150162 003422 86$: MOV      2RHCS2,CS2 ;SAVE CS2
5001 033160 017737 150156 003432      MOV      2RHST,DS1 ;SAVE TESTER STATUS
5002 033166 017737 150152 003436      MOV      2RHER,ER1 ;SAVE ERROR REGISTER
5003 033174 017737 150150 003442      MOV      2RHTDB,TDR ;SAVE TESTER DATA REG.
5004 033202 017737 150130 003440      MOV      2RHMR2,TC ;SAVE MR2 TESTER REG.
5005 033210 032777 000200 150112      BIT      2RDY,2RHCS1 ;IS READY SET
5006 033216 001003      BNE      SUPER ;RDY IS SET
5007 033220 104102      ERROR 102 ;RDY DID NOT SET
5008 033222 004737 007234      JSR      R7,WHYFO ;ANY ERRORS SET
5009 033226 032777 004000 150126 SUPER: BIT      2WCELO,2RHCS3 ;IS WCELO SET
5010 033234 001006      BNE      RITEON ;WCELO IS SET
5011 033236 104132      ERROR 132 ;WCELO DID NOT SET IN RHCS3
5012 033240 004737 007234      JSR      R7,WHYFO ;ANY ERRORS SET
5013 033244 105737 001103      TSTB     2ERFLG ;WAS THERE AN ERROR
5014 033250 001005      BNE      TWANG ;YES
5015 033252 032777 010000 150102 RITEON: BIT      2WCEHI,2RHCS3 ;IS WCEHI SET
5016 033260 001406      BEQ      TWANGY ;WCEHI DID NOT SET
5017 033262 104133      ERROR 133 ;WCEHI SET WITH WCELO
5018 033264 032777 040000 150046 TWANG: BIT      2WCE,2RHCS2 ;DID WCE SET IN CS2
5019 033272 001001      BNE      TWANGY ;YES, IT SHOULD BE
5020 033274 104134      ERROR 134 ;WCE DID NOT SET IN RHCS2
5021 033276 004737 006602      JSR      R7,CLEER ;CLEAR ERRORS
5022 033302 004737 050130      JSR      R7,ERRTST
5023 033306
5024
5025 *****
5026 ;*TEST 54 WCE ON ERROR TEST (WCEHI)
5027 ;*THIS TEST CHECKS THAT WCEHI SETS IN RHCS3
5028 ;*AND THAT WCE SETS IN RHCS1, IT ALSO TESTS
5029 ;*THAT WCELO DOES NOT SET WITH WCEHI.....
5030 ;*.....RH70 ONLY.....
5031 *****
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033306 000004      TST54: SCOPE
033310 005701      TST      R1 ;IS IT AN 11 OR A 70
033312 001402      BEQ      1$ ;IT'S AN RH70
033314 000137 034064      JMP      FANGY ;IT'S AN RH11, EXIT TEST
033320 012777 000007 150012 1$: MOV      27,2RHCS2 ;SET DEVICE 7
033326 012777 147776 147776      MOV      2-2,2RHWC ;TWO WORD TRANSFER
033334 012777 004000 147772      MOV      2EVENAD,2RHBA ;SETUP BUS ADDRESS
033342 013737 004002 004000      MOV      ODDAD,EVENAD ;DUP ODDAD
033350 012777 000061 147752      MOV      2WRTEO,2RHCS1 ;TELL IT TO WRITE
033356 005037 003446      CLR      BITCNT ;CLEAR BIT COUNTER
033362 032777 000200 147740 18$: BIT      2RDY,2RHCS1 ;IS RDY SET
033370 001015      BNE      WCEOWT ;BIT IS SET
033372 005237 003446      INC      BITCNT ;COUNT UP
033376 001371      BNE      18$ ;NOT FINISHED COUNTING
033400 005037 003446      CLR      BITCNT ;GET READY TO DO IT AGAIN
033404 032777 000200 147716 19$: BIT      2RDY,2RHCS1 ;IS IT SET YET?
033412 001004      BNE      WCEOWT ;YES
033414 005237 003446      INC      BITCNT ;COUNT UP
033420 001401      BEQ      WCEOWT ;BIT IS NOT GOING TO SET
033422 000770      BR      19$
033424
033424 017737 147700 003420 WCEOWT: MOV      2RHCS1,CS1 ;SAVE RHCS1

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5053	033432	017737	147674	003444		MOV	2RHWC,WC	:SAVE WORD COUNT
5054	033440	017737	147670	003414		MOV	2RHBA,BA	:SAVE BUS ADDRESS
5055	033446	005701				TST	R1	:IS IT AN RH11
5056	033450	001406				BEQ	87\$	:NO IT'S A 70
5057	033452	005037	003416			CLR	BAE	:CLEAR BAE
5058	033456	005037	003424			CLR	CS3	:CLEAR CS3
5059	033462	000137	033502			JMP	86\$	:CONTINUE
5060	033466	017737	147666	003416	87\$:	MOV	2RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
5061	033474	017737	147662	003424		MOV	2RHCS3,CS3	:SAVE RHCS3
5062	033502	017737	147632	003422	86\$:	MOV	2RHCS2,CS2	:SAVE CS2
5063	033510	017737	147626	003432		MOV	2RHST,DS1	:SAVE TESTER STATUS
5064	033516	017737	147622	003436		MOV	2RHER,ER1	:SAVE ERROR REGISTER
5065	033524	017737	147620	003442		MOV	2RHTDB,TDR	:SAVE TESTER DATA REG.
5066	033532	017737	147600	003440		MOV	2RHMR2,TC	:SAVE MR2 TESTER REG.
5067	033540	032777	000200	147562		BIT	8RDY,2RHCS1	:IS READY SET
5068	033546	001003				BNE	BEAU	:RDY IS SET
5069	033550	104102				ERROR	102	:RDY DID NOT SET
5070	033552	004737	007234			JSR	R7,WHYFO	:ANY ERRORS SET
5071	033556	005137	004002		BEAU:	COM	000AD	:REVERSE BITS IN 000AD
5072	033562	012777	004000	147544		MOV	8EVENAD,2RHBA	:CORRECT BUS ADDRESS
5073	033570	012777	177776	147534		MOV	8-2,2RHWC	:CORRECT WC
5074	033576	012777	000051	147524		MOV	8WRCHO,2RHCS1	:TELL IT TO WRITE CHECK
5075	033604	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
5076	033610	032777	000200	147512	18\$:	BIT	8RDY,2RHCS1	:IS RDY SET
5077	033616	001015				BNE	WCEERR	:BIT IS SET
5078	033620	005237	003446			INC	BITCNT	:COUNT UP
5079	033624	001371				BNE	18\$	:NOT FINISHED COUNTING
5080	033626	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
5081	033632	032777	000200	147470	19\$:	BIT	8RDY,2RHCS1	:IS IT SET YET?
5082	033640	001004				BNE	WCEERR	:YES
5083	033642	005237	003446			INC	BITCNT	:COUNT UP
5084	033646	001401				BEQ	WCEERR	:BIT IS NOT GOING TO SET
5085	033650	000770				BR	19\$	
5086	033652				WCEERR:			
5087	033652	017737	147452	003420		MOV	2RHCS1,CS1	:SAVE RHCS1
5088	033660	017737	147446	003444		MOV	2RHWC,WC	:SAVE WORD COUNT
5089	033666	017737	147442	003414		MOV	2RHBA,BA	:SAVE BUS ADDRESS
5090	033674	005701				TST	R1	:IS IT AN RH11
5091	033676	001406				BEQ	87\$	:NO IT'S A 70
5092	033700	005037	003416			CLR	BAE	:CLEAR BAE
5093	033704	005037	003424			CLR	CS3	:CLEAR CS3
5094	033710	000137	033730			JMP	86\$	:CONTINUE
5095	033714	017737	147440	003416	87\$:	MOV	2RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
5096	033722	017737	147434	003424		MOV	2RHCS3,CS3	:SAVE RHCS3
5097	033730	017737	147404	003422	86\$:	MOV	2RHCS2,CS2	:SAVE CS2
5098	033736	017737	147400	003432		MOV	2RHST,DS1	:SAVE TESTER STATUS
5099	033744	017737	147374	003436		MOV	2RHER,ER1	:SAVE ERROR REGISTER
5100	033752	017737	147372	003442		MOV	2RHTDB,TDR	:SAVE TESTER DATA REG.
5101	033760	017737	147352	003440		MOV	2RHMR2,TC	:SAVE MR2 TESTER REG.
5102	033766	032777	000200	147334		BIT	8RDY,2RHCS1	:IS READY SET
5103	033774	001003				BNE	ERTIP	:RDY IS SET
5104	033776	104102				ERROR	102	:RDY DID NOT SET
5105	034000	004737	007234			JSR	R7,WHYFO	:ANY ERRORS SET
5106	034004	032777	010000	147350	ERTIP:	BIT	8WCEHI,2RHCS3	:IS WCEHI SET
5107	034012	001006				BNE	BUSH	:WCEHI IS SET
5108	034014	104135				ERROR	135	:WCEHI DID NOT SET IN RHCS3

G08

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 98
 DZRHSC.P11 T54 WCE OW ERROR TEST (WCEHI)

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5109 034016 004737 007234 JSR R7,WHYFO ;ANY OTHER ERRORS SET
5110 034022 105737 001103 TSTB SERFLG ;WAS THERE AN ERROR
5111 034026 001012 BNE LEAGUE ;YES
5112 034030 032777 004000 147324 BUSH: BIT #WCELO,DRHCS3 ;IS WCELO SET
5113 034036 001406 BEQ LEAGUE ;NO,WCELO IS OK
5114 034040 104137 ERROR 137 ;WCELO SET WITH WCEHI
5115 034042 032777 040000 147270 LEFOUT: BIT #WCE,DRHCS2 ;DID WCE SET
5116 034050 001001 BNE LEAGUE ;WCE IS SET IN RHCS2
5117 034052 104136 ERROR 136 ;WCE DID NOT SET IN RHCS2
5118 034054 004737 006602 LEAGUE: JSR R7,CLEER ;CLEAR ERRORS
5119 034060 004737 050130 JSR R7,ERRTST
5120 034064 FANGY:
5121 *****
5122 ;*TEST SS INTERUPT ENABLE TEST
5123 ;*THIS TEST VERIFYS THAT IE WILL SET IN RHCS1
5124 ;*AND IT WILL CAUSE AN INTERUPT WHEN RDY IS SET
5125 *****
5126 034064 000004 TSTSS: SCOPE
5127 034066 012777 000007 147244 MOV #7,DRHCS2 ;SETUP UNIT NUMBER
5128 034074 012777 004000 147232 MOV #EVENAD,DRHBA ;SETUP BUS ADDRESS
5129 034102 005701 TST R1 ;RH11 OR RH70 ?
5130 034104 100403 BMI READY ;ITS AN RH11
5131 034106 012777 000000 147244 MOV #ZERO,DRHBAE ;ZERO THE BAE
5132 034114 012777 034376 147264 READY: MOV #IETST,AVECADD ;SET UP VECTOR ADDRESS
5133 034122 012737 000340 177776 MOV #340,PS ;SET PRIORITY 7
5134 034130 012777 177777 147174 MOV #1,DRHWC ;SET FOR ONE WORD
5135 034136 012777 000161 147164 MOV #WRITED!IE,DRHCS1 ;TELL IT TO WRITE
5136 034144 032777 000100 147156 BIT #IE,DRHCS1 ;IS IE SET
5137 034152 001001 BNE 25 ;YES CONTINUE TEST
5138 034154 104174 ERROR 174 ;IE WILL NOT SET
5139 034156 005037 177776 25: CLR #177776 ;CLEAR BIT COUNTER
5140 034162 005037 003446 CLR BITCNT ;IS RDY SET
5141 034166 032777 000200 147134 185: BIT #RDY,DRHCS1 ;BIT IS SET
5142 034174 001015 BNE TSTIE ;COUNT UP
5143 034176 005237 003446 INC BITCNT ;NOT FINISHED COUNTING
5144 034202 001371 BNE 185 ;GET READY TO DO IT AGAIN
5145 034204 005037 003446 CLR BITCNT ;IS IT SET YET?
5146 034210 032777 000200 147112 195: BIT #RDY,DRHCS1 ;YES
5147 034216 001004 BNE TSTIE ;COUNT UP
5148 034220 005237 003446 INC BITCNT ;BIT IS NOT GOING TO SET
5149 034224 001401 BEQ TSTIE
5150 034226 000770 BR 195
5151 034230 TSTIE:
5152 034230 017737 147074 003420 MOV DRHCS1,CS1 ;SAVE RHCS1
5153 034236 017737 147070 003444 MOV DRHWC,WC ;SAVE WORD COUNT
5154 034244 017737 147064 003414 MOV DRHBA,BA ;SAVE BUS ADDRESS
5155 034252 005701 TST R1 ;IS IT AN RH11
5156 034254 001406 BEQ 875 ;NO IT'S A 70
5157 034256 005037 003416 CLR BAE ;CLEAR BAE
5158 034262 005037 003424 CLR CS3 ;CLEAR CS3
5159 034266 000137 034306 JMP 865 ;CONTINUE
5160 034272 017737 147062 003416 875: MOV DRHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
5161 034300 017737 147056 003424 865: MOV DRHCS3,CS3 ;SAVE RHCS3
5162 034306 017737 147026 003422 MOV DRHCS2,CS2 ;SAVE CS2
5163 034314 017737 147022 003432 MOV DRHST,DS1 ;SAVE TESTER STATUS
5164 034322 017737 147016 003436 MOV DRHER,ER1 ;SAVE ERROR REGISTER

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H08

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 99
 D2RHBC.P11 T55 INTERRUPT ENABLE TEST

5165	034330	017737	147014	003442	MOV	2RH7DB, TDR	:SAVE TESTER DATA REG.
5166	034336	017737	146774	003440	MOV	2RHMR2, TC	:SAVE MR2 TESTER REG.
5167	034344	032777	000200	146756	BIT	*RDY, 2RHCS1	:IS READY SET ?
5168	034352	001003			BNE	15	:YES
5169	034354	104102			ERROR	102	:READY DID NOT SET
5170	034356	000137	034410		JMP	SPLIT	:EXIT TEST
5171	034362	105737	001103		15:	TSTB \$ERFLG	:WAS IE SET
5172	034366	001010			BNE	SPLIT	:NO, EXIT TEST
5173	034370	104173			ERROR	173	:RDY DID NOT CAUSE AN INTERRUPT
5174	034372	000137	034410		JMP	SPLIT	:EXIT TEST
5175	034376	022626			IETST:	CMP (SP)+, (SP)+	:CORRECT STACK
5176	034400	105737	001103		TSTB	\$ERFLG	:DID IE SET
5177	034404	001401			BEQ	SPLIT	:YES, EXIT TEST
5178	034406	104175			ERROR	175	:IE HAS OPEN GOING TO BUS
5179	034410	004737	006602		SPLIT:	JSR R7, CLEER	:CLEAR ERRORS
5180	034414	004737	050130		JSR	R7, ERRST	
5181					:*****		
5182					: *TEST 56 READ OPERATIONAL TEST (NORMAL) #1		
5183					: *THESE TESTS VERIFY ALL READ AND WRITE CODES		
5184					: *WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD		
5185					: *DURING THESE TESTS THE TESTER TIMING IS MARGINED AND		
5186					: *NO ERRORS SHOULD OCCUR		
5187					:*****		
5188	034420	000004			15T56:	SCOPE	
5189	034422	012777	000007	146710	MOV	*7, 2RHCS2	:SETUP UNIT SEVEN
5190	034430	012777	177777	146674	MOV	*-1, 2RHWC	:FOR ONE WORD
5191	034436	012777	004100	146670	MOV	*RBUF, 2RHBA	:SETUP BA
5192	034444	012737	000000	004100	MOV	*ZERO, RBUF	:SETUP DATA
5193	034452	012777	125252	146670	MOV	*OAB, 2RH7DB	:SETUP TESTER DB
5194	034460	005701			TST	R1	:IS IT AN 11 OR A 70
5195	034462	100403			BMI	15	:IT'S AN RH11
5196	034464	012777	000000	146666	MOV	*ZERO, 2RHBAE	:ZERO BAE
5197	034472	012777	000071	146630	15:	MOV *READ0, 2RHCS1	:TELL IT TO READ0
5198	034500	005037	003446		CLR	BITCNT	:CLEAR BIT COUNTER
5199	034504	032777	000200	146616	185:	BIT *RDY, 2RHCS1	:IS RDY SET
5200	034512	001015			BNE	25	:BIT IS SET
5201	034514	005237	003446		INC	BITCNT	:COUNT UP
5202	034520	001371			BNE	185	:NOT FINISHED COUNTING
5203	034522	005037	003446		CLR	BITCNT	:GET READY TO DO IT AGAIN
5204	034526	032777	000200	146574	195:	BIT *RDY, 2RHCS1	:IS IT SET YET?
5205	034534	001004			BNE	25	:YES
5206	034536	005237	003446		INC	BITCNT	:COUNT UP
5207	034542	001401			BEQ	25	:BIT IS NOT GOING TO SET
5208	034544	000770			BR	195	
5209	034546				25:		
5210	034546	017737	146556	003420	MOV	2RHCS1, CS1	:SAVE RHCS1
5211	034554	017737	146552	003444	MOV	2RHWC, WC	:SAVE WORD COUNT
5212	034562	017737	146546	003414	MOV	2RHBA, BA	:SAVE BUS ADDRESS
5213	034570	005701			TST	R1	:IS IT AN RH11
5214	034572	001406			BEQ	875	:NO IT'S A 70
5215	034574	005037	003416		CLR	BAE	:CLEAR BAE
5216	034600	005037	003424		CLR	CS3	:CLEAR CS3
5217	034604	000137	034624		JMP	865	:CONTINUE
5218	034610	017737	146544	003416	875:	MOV 2RHBAE, BAE	:SAVE BUS ADDRESS EXTENSION
5219	034616	017737	146540	003424	MOV	2RHCS3, CS3	:SAVE RHCS3
5220	034624	017737	146510	003422	865:	MOV 2RHCS2, CS2	:SAVE CS2

5221	034632	017737	146504	003432	MOV	2RHST,DS1	:SAVE TESTER STATUS
5222	034640	017737	146500	003436	MOV	2RHER,ER1	:SAVE ERROR REGISTER
5223	034646	017737	146476	003442	MOV	2RHTDB,TOR	:SAVE TESTER DATA REG.
5224	034654	017737	146456	003440	MOV	2RHMR2,TC	:SAVE MR2 TESTER REG.
5225	034662	017737	146462	001162	MOV	2RHTDB,\$REGO	:GET DATA
5226	034670	032777	000200	146432	BIT	8RDY,2RHCS1	:IS OR SET
5227	034676	001003			BNE	3\$	:YES RDY IS SET
5228	034700	104102			ERROR	102	:READY DID NOT SET
5229	034702	004737	007234		JSR	R7,WHYFO	:ARE ANY ERRORS SET
5230	034706	023777	004100	146434	CMP	RBUF,2RHTDB	:DID INFO GET WRITTEN OR READ
5231	034714	001407			BEQ	4\$	:INFO GOT LOADED
5232	034716	005737	004100		TST	RBUF	:DOES RBUF = 0
5233	034722	001403			BEQ	5\$	:YES INFO DID NOT LOAD
5234	034724	104147			ERROR	147	:ALL BITS DID NOT LOAD DURING
5235							:AN READO OPERATION
5236	034726	000137	034734		JMP	4\$	:EXIT TEST
5237	034732	104150			ERROR	150	:READO OPERATION DID NOT WORK
5238							:NO BITS WHERE LOADED TO RBUF
5239	034734	004737	007234		JSR	R7,WHYFO	:ANY ERRORS SET
5240	034740	105737	001103		TSTB	8ERFLG	:ANY ERRORS ?
5241	034744	001402			BEQ	6\$	:NO EXIT TEST
5242	034746	104146			ERROR	146	:PRINT REGISTERS
5243	034750	104170			ERROR	170	
5244	034752	004737	006602		JSR	R7,CLEER	:CLEAR ERRORS
5245	034756	004737	050130		JSR	R7,ERRTST	
5246							
5247							
5248							
5249							
5250							
5251							
5252							
5253	034762	000004					
5254	034764	012777	000007	146346	MOV	87,2RHCS2	:SETUP UNIT SEVEN
5255	034772	012777	125252	004000	MOV	8OAB,EVENAD	:SETUP INFORMATION
5256	035000	012777	000003	146346	MOV	8DMD!MCLK,2RHMR1	:SETUP DIAG. MODE
5257	035006	012777	177777	146316	MOV	8-1,2RHWC	:FOR ONE WORD
5258	035014	005701			TST	R1	:IS IT A 11 OR 70
5259	035016	100403			BMI	1\$	:IT'S AN 11
5260	035020	012777	000000	146332	MOV	8ZERO,2RHBAE	:ZERO BAE
5261	035026	012777	004000	146300	MOV	8EVENAD,2RHBA	:SETUP BA
5262	035034	012777	000061	146266	MOV	8WRITED,2RHCS1	:TELL IT TO WRITETO
5263	035042	012777	000001	146304	MOV	8DMD,2RHMR1	:MANIPULATE CLOCK
5264	035050	005037	003446		CLR	BITCNT	:CLEAR LOOP COUNTER
5265	035054	005237	003446		INC	BITCNT	:INCREMENT LOOP COUNTER
5266	035060	022737	000015	003446	CMP	815,BITCNT	:IS IT THIRD LOOP FOR SUSEC WAIT
5267	035066	001372			BNE	2\$	:NO LOOP AGAIN
5268	035070	012777	000003	146256	MOV	8DMD!MCLK,2RHMR1	:START CHANGING CLOCK
5269	035076	012777	000001	146250	MOV	8DMD,2RHMR1	:CHANGE CLOCK AGAIN
5270	035104	012777	000003	146242	MOV	8DMD!MCLK,2RHMR1	:CHANGE CLOCK AGAIN
5271	035112	012777	000001	146234	MOV	8DMD,2RHMR1	:CHANGE CLOCK AGAIN
5272	035120	012777	000000	146226	MOV	8ZERO,2RHMR1	:GET OUT OF DIAG MODE
5273	035126	005037	003446		CLR	BITCNT	:CLEAR BIT COUNTER
5274	035132	032777	000200	146170	BIT	8RDY,2RHCS1	:IS RDY SET
5275	035140	001015			BNE	7\$	:BIT IS SET
5276	035142	005237	003446		INC	BITCNT	:COUNT UP

 :*TEST 57 RH OPERATIONAL WRITE TEST #1
 :*THESE TESTS VERIFY ALL READ AND WRITE CODES
 :*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 :*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 :*NO ERRORS SHOULD OCCUR
 :*****

†ST57: SCOPE
 MOV 87,2RHCS2 :SETUP UNIT SEVEN
 MOV 8OAB,EVENAD :SETUP INFORMATION
 MOV 8DMD!MCLK,2RHMR1 :SETUP DIAG. MODE
 MOV 8-1,2RHWC :FOR ONE WORD
 TST R1 :IS IT A 11 OR 70
 BMI 1\$:IT'S AN 11
 MOV 8ZERO,2RHBAE :ZERO BAE
 MOV 8EVENAD,2RHBA :SETUP BA
 MOV 8WRITED,2RHCS1 :TELL IT TO WRITETO
 MOV 8DMD,2RHMR1 :MANIPULATE CLOCK
 CLR BITCNT :CLEAR LOOP COUNTER
 INC BITCNT :INCREMENT LOOP COUNTER
 CMP 815,BITCNT :IS IT THIRD LOOP FOR SUSEC WAIT
 BNE 2\$:NO LOOP AGAIN
 MOV 8DMD!MCLK,2RHMR1 :START CHANGING CLOCK
 MOV 8DMD,2RHMR1 :CHANGE CLOCK AGAIN
 MOV 8DMD!MCLK,2RHMR1 :CHANGE CLOCK AGAIN
 MOV 8DMD,2RHMR1 :CHANGE CLOCK AGAIN
 MOV 8ZERO,2RHMR1 :GET OUT OF DIAG MODE
 CLR BITCNT :CLEAR BIT COUNTER
 BIT 8RDY,2RHCS1 :IS RDY SET
 BNE 7\$:BIT IS SET
 INC BITCNT :COUNT UP

5277	035146	001371				BNE	185		;NOT FINISHED COUNTING
5278	035150	005037	003446			CLR	BITCNT		;GET READY TO DO IT AGAIN
5279	035154	032777	000200	146146	195:	BIT	RDY, RHCS1		;IS IT SET YET?
5280	035162	001004				BNE	75		;YES
5281	035164	005237	003446			INC	BITCNT		;COUNT UP
5282	035170	001401				BEQ	75		;BIT IS NOT GOING TO SET
5283	035172	000770				BR	195		
5284	035174				75:				
5285	035174	017737	146130	003420		MOV	RHCS1, CS1		;SAVE RHCS1
5286	035202	017737	146124	003444		MOV	RHWC, WC		;SAVE WORD COUNT
5287	035210	017737	146120	003414		MOV	RHBA, BA		;SAVE BUS ADDRESS
5288	035216	005701				TST	R1		;IS IT AN RH11
5289	035220	001406				BEQ	875		;NO IT'S A 70
5290	035222	005037	003416			CLR	BAE		;CLEAR BAE
5291	035226	005037	003424			CLR	CS3		;CLEAR CS3
5292	035232	000137	035252			JMP	865		;CONTINUE
5293	035236	017737	146116	003416	875:	MOV	RHBAE, BAE		;SAVE BUS ADDRESS EXTENSION
5294	035244	017737	146112	003424		MOV	RHCS3, CS3		;SAVE RHCS3
5295	035252	017737	146062	003422	865:	MOV	RHCS2, CS2		;SAVE CS2
5296	035260	017737	146056	003432		MOV	RHST, DS1		;SAVE TESTER STATUS
5297	035266	017737	146052	003436		MOV	RHER, ER1		;SAVE ERROR REGISTER
5298	035274	017737	146050	003442		MOV	RHTDB, TDR		;SAVE TESTER DATA REG.
5299	035302	017737	146030	003440		MOV	RHMR2, TC		;SAVE MR2 TESTER REG.
5300	035310	017737	146034	001162		MOV	RHTDB, SREG0		;GET DATA
5301	035316	032777	000200	146004		BIT	RDY, RHCS1		;IS READY SET
5302	035324	001001				BNE	85		;YES, CONTINUE TEST
5303	035326	104102				ERROR	102		;READY DID NOT SET
5304	035330	022777	177777	145774	85:	CMP	#-1, RHWC		;DID WC INCREMENT
5305	035336	001001				BNE	35		;YES, CONT TEST
5306	035340	104140				ERROR	140		;WRITETO OPERATION DID NOT INC WC
5307	035342	022777	004002	145764	35:	CMP	#ODDAD, RHBA		;DID BA INCREMENT
5308	035350	001401				BEQ	45		;YES, CONT TEST
5309	035352	104141				ERROR	141		;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
5310	035354	023777	004000	145766	45:	CMP	EVENAD, RHTDB		;DID INFO WRITETO TESTER
5311	035362	001401				BEQ	55		;YES, CONT
5312	035364	104142				ERROR	142		;INFO DID NOT WRITETO TESTER
5313	035366	004737	007234		55:	JSR	R7, WHYFO		;ARE ANY ERROR BITS SET
5314	035372	105737	001103			TSTB	SEAF LG		;WAS THER AN ERROR
5315	035376	001402				BEQ	65		;NO EXIT TEST
5316	035400	104146				ERROR	146		;THESE ARE THE CONTENTS OF ALL RH70 REG.
5317	035402	104170				ERROR	170		;THIS IS TO COMPLETE ERROR PRINTOUT
5318	035404	004737	006602		65:	JSR	R7, CLEER		;CLEER ERRORS IF ANY
5319	035410	004737	050130			JSR	R7, ERRTST		
5320									
5321									
5322									
5323									
5324									
5325									
5326									
5327	035414	000004							
5328	035416	012777	000007	145714		MOV	#7, RHCS2		;SETUP UNIT SEVEN
5329	035424	012777	177777	145700		MOV	#-1, RHWC		;FOR ONE WORD
5330	035432	012777	004100	145674		MOV	#RBUF, RHBA		;SRUP BA
5331	035440	012737	000000	004100		MOV	#ZERO, RBUF		;SETUP DATA
5332	035446	012777	125252	145674		MOV	#OAB, RHTDB		;SETUP TESTER DB

;*****
 ;TEST 60 READ OPERATIONAL TEST (NORMAL) #2
 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 ;*NO ERRORS SHOULD OCCUR
 ;*****
 ;TST60: SCOPE
 ;SETUP UNIT SEVEN
 ;FOR ONE WORD
 ;SRUP BA
 ;SETUP DATA
 ;SETUP TESTER DB

K08

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 102
 DZRHBC.P11 T60 READ OPERATIONAL TEST (NORMAL) #2

5333	035454	005701				TST	R1	: IS IT AN 11 OR A 70
5334	035456	100403				BMI	1\$	: IT'S AN RH11
5335	035460	012777	000000	145672		MOV	#ZERO, @RHBAE	: ZERO BAE
5336	035466	012777	000073	145634	1\$:	MOV	#READ2, @RHCS1	: TELL IT TO READ2
5337	035474	005037	003446			CLR	BITCNT	: CLEAR BIT COUNTER
5338	035500	032777	000200	145622	18\$:	BIT	#RDY, @RHCS1	: IS RDY SET
5339	035506	001015				BNE	2\$	: BIT IS SET
5340	035510	005237	003446			INC	BITCNT	: COUNT UP
5341	035514	001371				BNE	18\$	: NOT FINISHED COUNTING
5342	035516	005037	003446			CLR	BITCNT	: GET READY TO DO IT AGAIN
5343	035522	032777	000200	145600	19\$:	BIT	#RDY, @RHCS1	: IS IT SET YET?
5344	035530	001004				BNE	2\$	: YES
5345	035532	005237	003446			INC	BITCNT	: COUNT UP
5346	035536	001401				BEQ	2\$	: BIT IS NOT GOING TO SET
5347	035540	000770				BR	19\$	
5348	035542				2\$:			
5349	035542	017737	145562	003420		MOV	@RHCS1, CS1	: SAVE RHCS1
5350	035550	017737	145556	003444		MOV	@RHWC, WC	: SAVE WORD COUNT
5351	035556	017737	145552	003414		MOV	@RHBA, BA	: SAVE BUS ADDRESS
5352	035564	005701				TST	R1	: IS IT AN RH11
5353	035566	001406				BEQ	87\$	: NO IT'S A 70
5354	035570	005037	003416			CLR	BAE	: CLEAR BAE
5355	035574	005037	003424			CLR	CS3	: CLEAR CS3
5356	035600	000137	035620			JMP	86\$	: CONTINUE
5357	035604	017737	145550	003416	87\$:	MOV	@RHBAE, BAE	: SAVE BUS ADDRESS EXTENSION
5358	035612	017737	145544	003424		MOV	@RHCS3, CS3	: SAVE RHCS3
5359	035620	017737	145514	003422	86\$:	MOV	@RHCS2, CS2	: SAVE CS2
5360	035626	017737	145510	003432		MOV	@RHST, DS1	: SAVE TESTER STATUS
5361	035634	017737	145504	003436		MOV	@RHER, ER1	: SAVE ERROR REGISTER
5362	035642	017737	145502	003442		MOV	@RHTDB, TDR	: SAVE TESTER DATA REG.
5363	035650	017737	145462	003440		MOV	@RHMR2, TC	: SAVE MR2 TESTER REG.
5364	035656	017737	145466	001162		MOV	@RHTDB, \$REGO	: GET DATA
5365	035664	032777	000200	145436		BIT	#RDY, @RHCS1	: IS OR SET
5366	035672	001003				BNE	3\$	: YES RDY IS SET
5367	035674	104102				ERROR	102	: READY DID NOT SET
5368	035676	004737	007234			JSR	R7, WHYFO	: ARE ANY ERRORS SET
5369	035702	023777	004100	145440	3\$:	CMP	RBUF, @RHTDB	: DID INFO GET WRITTEN OR READ
5370	035710	001407				BEQ	4\$	: INFO GOT LOADED
5371	035712	005737	004100			TST	RBUF	: DOES RBUF = 0
5372	035716	001403				BEQ	5\$	: YES INFO DID NOT LOAD
5373	035720	104147				ERROR	147	: ALL BITS DID NOT LOAD DURING
5374								: AN READ2 OPERATION
5375	035722	000137	035730			JMP	4\$	: EXIT TEST
5376	035726	104150			5\$:	ERROR	150	: READ2 OPERATION DID NOT WORK
5377								: NO BITS WERE LOADED TO RBUF
5378	035730	004737	007234		4\$:	JSR	R7, WHYFO	: ANY ERRORS SET
5379	035734	105737	001103			TSTB	\$ERFLG	: ANY ERRORS ?
5380	035740	001402				BEQ	6\$	: NO, EXIT TEST
5381	035742	104146				ERROR	146	: PRINT REGISTERS
5382	035744	104170				ERROR	170	
5383	035746	004737	006602		6\$:	JSR	R7, CLEER	: CLEAR ERRORS
5384	035752	004737	050130			JSR	R7, ERTST	
5385								
5386								
5387								
5388								

 ;*TEST 61 READ OPERATIONAL TEST #1
 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD

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MOV      #7, RHCS2      ; SETUP UNIT SEVEN
MOV      #AB, RH7DB      ; SETUP INFORMATION
MOV      #DMD!MCLK, RHMR1 ; SETUP DIAG. MODE
MOV      #-1, RHWC
TST      R1              ; FOR ONE WORD
BMI      1$              ; IS IT A 11 OR 70
MOV      #ZERO, RHBAE     ; IT'S AN 11
MOV      #EVENAD, RHBA     ; ZERO BAE
MOV      #READD, RHCS1    ; SETUP BA
MOV      #DMD, RHMR1      ; TELL IT TO READFROM
CLR      BITCNT           ; MANIPULATE CLOCK
INC      BITCNT           ; CLEAR LOOP COUNTER
CMP      #15, BITCNT      ; INCREMENT LOOP COUNTER
BNE      2$              ; IS IT THIRD LOOP FOR SUSEC WAIT
MOV      #DMD!MCLK, RHMR1 ; NO LOOP AGAIN
MOV      #DMD, RHMR1      ; START CHANGING CLOCK
MOV      #DMD!MCLK, RHMR1 ; CHANGE CLOCK AGAIN
MOV      #DMD, RHMR1      ; CHANGE CLOCK AGAIN
MOV      #ZERO, RHMR1     ; CHANGE CLOCK AGAIN
CLR      BITCNT           ; GET OUT OF DIAG MODE
BIT      #RDY, RHCS1      ; CLEAR BIT COUNTER
BNE      7$              ; IS RDY SET
INC      BITCNT           ; BIT IS SET
BNE      18$             ; COUNT UP
CLR      BITCNT           ; NOT FINISHED COUNTING
BIT      #RDY, RHCS1      ; GET READY TO DO IT AGAIN
BNE      7$              ; IS IT SET YET?
INC      BITCNT           ; YES
BNE      7$              ; COUNT UP
BEQ      7$              ; BIT IS NOT GOING TO SET
BR       19$

MOV      RHCS1, CS1      ; SAVE RHCS1
MOV      RHWC, WC        ; SAVE WORD COUNT
MOV      RHBA, BA        ; SAVE BUS ADDRESS
TST      R1              ; IS IT AN RH11
BEQ      87$             ; NO IT'S A 70
CLR      BAE             ; CLEAR BAE
CLR      CS3             ; CLEAR CS3
JMP      86$             ; CONTINUE
MOV      RHBAE, BAE       ; SAVE BUS ADDRESS EXTENSION
MOV      RHCS3, CS3       ; SAVE RHCS3
MOV      RHCS2, CS2       ; SAVE CS2
MOV      RHST, OS1        ; SAVE TESTER STATUS
MOV      RHER, ER1        ; SAVE ERROR REGISTER
MOV      RH7DB, TOR       ; SAVE TESTER DATA REG.
MOV      RHMR2, TC        ; SAVE MR2 TESTER REG.
MOV      RH7DB, SREGD     ; GET DATA
BIT      #RDY, RHCS1      ; IS READY SET
BNE      8$              ; YES, CONTINUE TEST
ERROR    102             ; READY DID NOT SET
CMP      #-1, RHWC        ; DID WC INCREMENT
BNE      3$              ; YES, CONT TEST

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M08

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 104
 DZRHBC.P11 T61 READ OPERATIONAL TEST #1

5445	036334	104143			ERROR	143		; READFROM OPERATION DID NOT INC WC
5446	036336	022777	004002	144770	3\$:	CMP	#ODDAD, ARHBA	; DID BA INCREMENT
5447	036344	001401			BEQ	4\$		; YES CONT TEST
5448	036346	104144			ERROR	144		; BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
5449	036350	023777	004000	144772	4\$:	CMP	EVENAD, ARHTDB	; DID INFO READFROM TESTER
5450	036356	001401			BEQ	5\$		; YES, CONT
5451	036360	104145			ERROR	145		; INFO DID NOT READFROM TESTER
5452	036362	004737	007234		5\$:	JSR	R7, WHYFO	; ARE ANY ERROR BITS SET
5453	036366	105737	001103		TSTB	SEFLG		; WAS THER AN ERROR
5454	036372	001402			BEQ	6\$		; NO EXIT TEST
5455	036374	104146			ERROR	146		; THESE ARE THE CONTENTS OF ALL RH70 REG.
5456	036376	104170			ERROR	170		; THIS IS TO COMPLETE ERROR PRINTOUT
5457	036400	004737	006602		6\$:	JSR	R7, CLEER	; CLEER ERRORS IF ANY
5458	036404	004737	050130		JSR	R7, EARTST		
5459								
5460								
5461								
5462								
5463								
5464								
5465								
5466	036410	000004			†ST62:	SCOPE		
5467	036412	012777	000007	144720	MOV	#7, ARHCS2		; SETUP UNIT SEVEN
5468	036420	012777	177777	144704	MOV	#-1, ARHWC		; FOR ONE WORD
5469	036426	012777	004100	144700	MOV	#RBUF, ARHBA		; SRTUP BA
5470	036434	012737	000000	004100	MOV	#ZERO, RBUF		; SETUP DATA
5471	036442	012777	125252	144700	MOV	#OAB, ARHTDB		; SETUP TESTER DB
5472	036450	005701			TST	R1		; IS IT AN 11 OR A 70
5473	036452	100403			BMI	1\$		; IT'S AN RH11
5474	036454	012777	000000	144676	MOV	#ZERO, ARHBAE		; ZERO BAE
5475	036462	012777	000075	144640	1\$:	MOV	#READ4, ARHCS1	; TELL IT TO READ4
5476	036470	005037	003446		CLR	BITCNT		; CLEAR BIT COUNTER
5477	036474	032777	000200	144626	18\$:	BIT	#RDY, ARHCS1	; IS RDY SET
5478	036502	001015			BNE	2\$		; BIT IS SET
5479	036504	005237	003446		INC	BITCNT		; COUNT UP
5480	036510	001371			BNE	18\$		; NOT FINISHED COUNTING
5481	036512	005037	003446		CLR	BITCNT		; GET READY TO DO IT AGAIN
5482	036516	032777	000200	144604	19\$:	BIT	#RDY, ARHCS1	; IS IT SET YET?
5483	036524	001004			BNE	2\$		; YES
5484	036526	005237	003446		INC	BITCNT		; COUNT UP
5485	036532	001401			BEQ	2\$		; BIT IS NOT GOING TO SET
5486	036534	000770			BR	19\$		
5487	036536				2\$:			
5488	036536	017737	144566	003420	MOV	ARHCS1, CS1		; SAVE RHCS1
5489	036544	017737	144562	003444	MOV	ARHWC, WC		; SAVE WORD COUNT
5490	036552	017737	144556	003414	MOV	ARHBA, BA		; SAVE BUS ADDRESS
5491	036560	005701			TST	R1		; IS IT AN RH11
5492	036562	001406			BEQ	87\$		; NO IT'S A 70
5493	036564	005037	003416		CLR	BAE		; CLEAR BAE
5494	036570	005037	003424		CLR	CS3		; CLEAR CS3
5495	036574	000137	036614		JMP	86\$		; CONTINUE
5496	036600	017737	144554	003416	87\$:	MOV	ARHBAE, BAE	; SAVE BUS ADDRESS EXTENSION
5497	036606	017737	144550	003424	MOV	ARHCS3, CS3		; SAVE RHCS3
5498	036614	017737	144520	003422	86\$:	MOV	ARHCS2, CS2	; SAVE CS2
5499	036622	017737	144514	003432	MOV	ARHST, DS1		; SAVE TESTER STATUS
5500	036630	017737	144510	003436	MOV	ARHER, ER1		; SAVE ERROR REGISTER

5501	036636	017737	144506	003442		MOV	DRHTDB, TDR		;SAVE TESTER DATA REG.
5502	036644	017737	144466	003440		MOV	DRHMR2, TC		;SAVE MR2 TESTER REG.
5503	036652	017737	144472	001162		MOV	DRHTDB, SREGO		;GET DATA
5504	036660	032777	000200	144442		BIT	#RDY, DRHCS1		;IS OR SET
5505	036666	001003				BNE	3\$		;YES RDY IS SET
5506	036670	104102				ERROR	102		;READY DID NOT SET
5507	036672	004737	007234			JSR	R7, WHYFO		;ARE ANY ERRORS SET
5508	036676	023777	004100	144444	3\$:	CMP	RBUF, DRHTDB		;DID INFO GET WRITTEN OR READ
5509	036704	001407				BEQ	4\$		;INFO GOT LOADED
5510	036706	005737	004100			TST	RBUF		;DOES RBUF = 0
5511	036712	001403				BEQ	5\$		;YES INFO DID NOT LOAD
5512	036714	104147				ERROR	147		;ALL BITS DID NOT LOAD DURING
5513									;AN READ4 OPERATION
5514	036716	000137	036724			JMP	4\$		;EXIT TEST
5515	036722	104150			5\$:	ERROR	150		;READY4 OPERATION DID NOT WORK
5516									;NO BITS WERE LOADED TO RBUF
5517	036724	004737	007234		4\$:	JSR	R7, WHYFO		;ANY ERRORS SET
5518	036730	105737	001103			TSTB	\$ERFLG		;ANY ERRORS ?
5519	036734	001402				BEQ	6\$		;NO EXIT TEST
5520	036736	104146				ERROR	146		;PRINT REGISTERS
5521	036740	104170				ERROR	170		
5522	036742	004737	006602		6\$:	JSR	R7, CLEAR		;CLEAR ERRORS
5523	036746	004737	050130			JSR	R7, ERTST		
5524									
5525									
5526									
5527									
5528									
5529									
5530									
5531	036752	000004				TEST63:	SCOPE		
5532	036754	012777	000007	144356		MOV	#7, DRHCS2		;SETUP UNIT SEVEN
5533	036762	012737	125252	004000		MOV	#0AB, EVENAD		;SETUP INFORMATION
5534	036770	012777	001003	144356		MOV	#DMD!MCLK!SLKM, DRHMR1		;SETUP DIAG. MODE
5535	036776	012777	177777	144326		MOV	#-1, DRHWC		;FOR ONE WORD
5536	037004	005701				TST	R1		;IS IT A 11 OR 70
5537	037006	100403				BMI	1\$		;IT'S AN 11
5538	037010	012777	000000	144342		MOV	#ZERO, DRHBAE		;ZERO BAE
5539	037016	012777	004000	144310	1\$:	MOV	#EVENAD, DRHBA		;SETUP BA
5540	037024	012777	000063	144276		MOV	#WRITE2, DRHCS1		;TELL IT TO WRITETO
5541	037032	012777	001001	144314		MOV	#DMD!SLKM, DRHMR1		;MANIPULATE CLOCK
5542	037040	005037	003446			CLR	BITCNT		;CLEAR LOOP COUNTER
5543	037044	005237	003446		2\$:	INC	BITCNT		;INCREMENT LOOP COUNTER
5544	037050	022737	000015	003446		CMP	#15, BITCNT		;IS IT THIRD LOOP FOR SUSEC WAIT
5545	037056	001372				BNE	2\$		;NO LOOP AGAIN
5546	037060	012777	001003	144266		MOV	#DMD!MCLK!SLKM, DRHMR1		;START CHANGING CLOCK
5547	037066	012777	001001	144260		MOV	#DMD!SLKM, DRHMR1		;CHANGE CLOCK AGAIN
5548	037074	012777	001003	144252		MOV	#DMD!MCLK!SLKM, DRHMR1		;CHANGE CLOCK AGAIN
5549	037102	012777	001001	144244		MOV	#DMD!SLKM, DRHMR1		;CHANGE CLOCK AGAIN
5550	037110	012777	000000	144236		MOV	#ZERO, DRHMR1		;GET OUT OF DIAG MODE
5551	037116	005037	003446			CLR	BITCNT		;CLEAR BIT COUNTER
5552	037122	032777	000200	144200	18\$:	BIT	#RDY, DRHCS1		;IS RDY SET
5553	037130	001015				BNE	7\$		;BIT IS SET
5554	037132	005237	003446			INC	BITCNT		;COUNT UP
5555	037136	001371				BNE	18\$		;NOT FINISHED COUNTING
5556	037140	005037	003446			CLR	BITCNT		;GET READY TO DO IT AGAIN


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5557 037144 032777 000200 144156 195: BIT      BRDY, BRHCS1      :IS IT SET YET?
5558 037152 001004          BNE      B7$          :YES
5559 037154 005237 003446      INC      BITCNT      :COUNT UP
5560 037160 001401          BEQ      B7$          :BIT IS NOT GOING TO SET
5561 037162 000770          BR       195
5562 037164          75:
5563 037164 017737 144140 003420      MOV      BRHCS1, CS1      :SAVE RHCS1
5564 037172 017737 144134 003444      MOV      BRHWC, WC      :SAVE WORD COUNT
5565 037200 017737 144130 003414      MOV      BRHBA, BA      :SAVE BUS ADDRESS
5566 037206 005701          TST      R1          :IS IT AN RH11
5567 037210 001406          BEQ      B7$          :NO IT'S A 70
5568 037212 005037 003416      CLR      BAE      :CLEAR BAE
5569 037216 005037 003424      CLR      CS3      :CLEAR CS3
5570 037222 000137 037242          JMP      B6$          :CONTINUE
5571 037226 017737 144126 003416 875: MOV      BRHBAE, BAE      :SAVE BUS ADDRESS EXTENSION
5572 037234 017737 144122 003424      MOV      BRHCS3, CS3      :SAVE RHCS3
5573 037242 017737 144072 003422 865: MOV      BRHCS2, CS2      :SAVE CS2
5574 037250 017737 144066 003432      MOV      BRHST, DS1      :SAVE TESTER STATUS
5575 037256 017737 144062 003436      MOV      BRHER, ER1      :SAVE ERROR REGISTER
5576 037264 017737 144060 003442      MOV      BRHTDB, TDR      :SAVE TESTER DATA REG.
5577 037272 017737 144040 003440      MOV      BRHMR2, TC      :SAVE MR2 TESTER REG.
5578 037300 017737 144044 001162      MOV      BRHTDB, $REGO      :GET DATA
5579 037306 032777 000200 144014      BIT      BRDY, BRHCS1      :IS READY SET
5580 037314 001001          BNE      B5$          :YES CONTINUE TEST
5581 037316 104102          ERROR 102      :READY DID NOT SET
5582 037320 022777 177777 144004 85: CMP      B-1, BRHWC      :DID WC INCREMENT
5583 037326 001001          BNE      B3$          :YES CONT TEST
5584 037330 104140          ERROR 140      :WRITETO OPERATION DID NOT INC WC
5585 037332 022777 004002 143774 35: CMP      $ODDAD, BRHBA      :DID BA INCREMENT
5586 037340 001401          BEQ      4$          :YES CONT TEST
5587 037342 104141          ERROR 141      :BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
5588 037344 023777 004000 143776 45: CMP      EVENAD, BRHTDB      :DID INFO WRITETO TESTER
5589 037352 001401          BEQ      5$          :YES CONT
5590 037354 104142          ERROR 142      :INFO DID NOT WRITETO TESTER
5591 037356 004737 007234          JSR      R7, WHYFO      :ARE ANY ERROR BITS SET
5592 037362 105737 001103          TSTB     $ERRFLG      :WAS THER AN ERROR
5593 037366 001402          BEQ      6$          :NO EXIT TEST
5594 037370 104146          ERROR 146      :THESE ARE THE CONTENTS OF ALL RH70 REG.
5595 037372 104170          ERROR 170      :THIS IS TO COMPLETE ERROR PRINTOUT
5596 037374 004737 006602          JSR      R7, CLEER      :CLEER ERRORS IF ANY
5597 037400 004737 050130          JSR
5598
5599
5600 *****
5601 *TEST 64 READ OPERATIONAL TEST (NORMAL) #4
5602 *THESE TESTS VERIFY ALL READ AND WRITE CODES
5603 *WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5604 *DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5605 *NO ERRORS SHOULD OCCUR
5606 *****
5607 †T64: SCOPE
5608 MOV      #7, BRHCS2      :SETUP UNIT SEVEN
5609 MOV      B-1, BRHWC      :FOR ONE WORD
5610 MOV      $RBUF, BRHBA      :SRUP BA
5611 MOV      $ZERO, RBUF      :SETUP DATA
5612 MOV      $OAB, BRHTDB      :SETUP TESTER DB
5613 TST      R1          :IS IT AN 11 OR A 70
5614 BMI     1$          :IT'S AN RH11

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5613	037450	012777	000000	143702		MOV	#ZERO, ZRMBAE	:ZERO BAE
5614	037456	012777	000077	143644	15:	MOV	#READ6, ZRHCS1	:TELL IT TO READ6
5615	037464	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
5616	037470	032777	000200	143632	185:	BIT	#RDY, ZRHCS1	:IS RDY SET
5617	037476	001015				BNE	25	:BIT IS SET
5618	037500	005237	003446			INC	BITCNT	:COUNT UP
5619	037504	001371				BNE	185	:NOT FINISHED COUNTING
5620	037506	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
5621	037512	032777	000200	143610	195:	BIT	#RDY, ZRHCS1	:IS IT SET YET?
5622	037520	001004				BNE	25	:YES
5623	037522	005237	003446			INC	BITCNT	:COUNT UP
5624	037526	001401				BEQ	25	:BIT IS NOT GOING TO SET
5625	037530	000770				BR	195	
5626	037532				25:			
5627	037532	017737	143572	003420		MOV	ZRHCS1, CS1	:SAVE RHCS1
5628	037540	017737	143566	003444		MOV	ZRHWC, WC	:SAVE WORD COUNT
5629	037546	017737	143562	003414		MOV	ZRHBA, BA	:SAVE BUS ADDRESS
5630	037554	005701				TST	R1	:IS IT AN RH11
5631	037556	001406				BEQ	875	:NO IT'S A 70
5632	037560	005037	003416			CLR	BAE	:CLEAR BAE
5633	037564	005037	003424			CLR	CS3	:CLEAR CS3
5634	037570	000137	037610			JMP	865	:CONTINUE
5635	037574	017737	143560	003416	875:	MOV	ZRHBAE, BAE	:SAVE BUS ADDRESS EXTENSION
5636	037602	017737	143554	003424		MOV	ZRHCS3, CS3	:SAVE RHCS3
5637	037610	017737	143524	003422	865:	MOV	ZRHCS2, CS2	:SAVE CS2
5638	037616	017737	143520	003432		MOV	ZRHST, DS1	:SAVE TESTER STATUS
5639	037624	017737	143514	003436		MOV	ZRHER, ER1	:SAVE ERROR REGISTER
5640	037632	017737	143512	003442		MOV	ZRHTDB, TDR	:SAVE TESTER DATA REG.
5641	037640	017737	143472	003440		MOV	ZRHMR2, TC	:SAVE MR2 TESTER REG.
5642	037646	017737	143476	001162		MOV	ZRHTDB, \$REGO	:GET DATA
5643	037654	032777	000200	143446		BIT	#RDY, ZRHCS1	:IS OR SET
5644	037662	001003				BNE	35	:YES RDY IS SET
5645	037664	104102				ERROR	102	:READY DID NOT SET
5646	037666	004737	007234			JSR	R7, WHYFO	:ARE ANY ERRORS SET
5647	037672	023777	004100	143450	35:	CMP	RBUF, ZRHTDB	:DID INFO GET WRITTEN OR READ
5648	037700	001407				BEQ	45	:INFO GOT LOADED
5649	037702	005737	004100			TST	RBUF	:DOES RBUF = 0
5650	037706	001403				BEQ	55	:YES INFO DID NOT LOAD
5651	037710	104115				ERROR	115	:ALL BITS DID NOT LOAD DURING
5652								:AN READ6 OPERATION
5653	037712	000137	037720			JMP	45	:EXIT TEST
5654	037716	104107			55:	ERROR	107	:READ6 OPERATION DID NOT WORK
5655								:NO BITS WERE LOADED TO RBUF
5656	037720	004737	007234		45:	JSR	R7, WHYFO	:ANY ERRORS SET
5657	037724	105737	001103			TSTB	\$ERFLG	:ANY ERRORS ?
5658	037730	001402				BEQ	65	:NO EXIT TEST
5659	037732	104146				ERROR	146	:PRINT REGISTERS
5660	037734	104170				ERROR	170	
5661	037736	004737	006602		65:	JSR	R7, CLEAR	:CLEAR ERRORS
5662	037742	004737	050130			JSR	R7, ERRTST	
5663								
5664								
5665								
5666								
5667								
5668								

 :*TEST 65 RH OPERATIONAL READ TEST #2
 :*THESE TESTS VERIFY ALL READ AND WRITE CODES
 :*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 :*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 :*NO ERRORS SHOULD OCCUR

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*****
5669          037746 000004          143362 1ST65: SCOPE
5670          037750 012777 000007 143362 MOV      #7, RHCS2          : SETUP UNIT SEVEN
5671          037756 012777 052525 143364 MOV      #AB, RH1DB          : SETUP INFORMATION
5672          037764 012777 001003 143362 MOV      #DMD!MCLK!SLKM, RHMR1 : SETUP DIAG. MODE
5673          037772 012777 177777 143332 MOV      #-1, RHWC          : FOR ONE WORD
5674          040000 005701          : IS IT A 11 OR 70
5675          040002 100403          : IT'S AN 11
5676          040004 012777 000000 143346 MOV      #ZERO, RHBAE          : ZERO BAE
5677          040012 012777 004000 143314 1$: MOV      #EVENAD, RHBA          : SETUP BA
5678          040020 012777 000C73 143302 MOV      #READ2, RHCS1          : TELL IT TO READFROM
5679          040026 012777 001001 143320 MOV      #DMD!SLKM, RHMR1          : MANIPULATE CLOCK
5680          040034 005037 003446          : CLEAR LOOP COUNTER
5681          040040 005237 003446 2$: INC      BITCNT          : INCREMENT LOOP COUNTER
5682          040044 022737 000015 003446 CMP      #15, BITCNT          : IS IT THIRD LOOP FOR SUSEC WAIT
5683          040052 001372          : NO LOOP AGAIN
5684          040054 012777 001003 143272 MOV      #DMD!MCLK!SLKM, RHMR1          : START CHANGING CLOCK
5685          040062 012777 001001 143264 MOV      #DMD!SLKM, RHMR1          : CHANGE CLOCK AGAIN
5686          040070 012777 001003 143256 MOV      #DMD!MCLK!SLKM, RHMR1          : CHANGE CLOCK AGAIN
5687          040076 012777 001001 143250 MOV      #DMD!SLKM, RHMR1          : CHANGE CLOCK AGAIN
5688          040104 012777 000C00 143242 MOV      #ZERO, RHMR1          : GET OUT OF DIAG MODE
5689          040112 005037 003446          : CLEAR BIT COUNTER
5690          040116 032777 000200 143204 18$: BIT      #RDY, RHCS1          : IS RDY SET
5691          040124 001015          : BIT IS SET
5692          040126 005237 003446          : COUNT UP
5693          040132 001371          : NOT FINISHED COUNTING
5694          040134 005037 003446          : GET READY TO DO IT AGAIN
5695          040140 032777 000200 143162 19$: BIT      #RDY, RHCS1          : IS IT SET YET?
5696          040146 001004          : YES
5697          040150 005237 003446          : COUNT UP
5698          040154 001401          : BIT IS NOT GOING TO SET
5699          040156 000770          :
5700          040160          7$:
5701          040160 017737 143144 003420 MOV      RHCS1, CS1          : SAVE RHCS1
5702          040166 017737 143140 003444 MOV      RHWC, WC          : SAVE WORD COUNT
5703          040174 017737 143134 003414 MOV      RHBA, BA          : SAVE BUS ADDRESS
5704          040202 005701          : IS IT AN RH11
5705          040204 001406          : NO IT'S A 70
5706          040206 005037 003416          : CLEAR BAE
5707          040212 005037 003424          : CLEAR CS3
5708          040216 000137 040236          : CONTINUE
5709          040222 017737 143132 003416 87$: MOV      RHBAE, BAE          : SAVE BUS ADDRESS EXTENSION
5710          040230 017737 143126 003424 86$: MOV      RHCS3, CS3          : SAVE RHCS3
5711          040236 017737 143076 003422 MOV      RHCS2, CS2          : SAVE CS2
5712          040244 017737 143072 003432 MOV      RHST, OS1          : SAVE TESTER STATUS
5713          040252 017737 143066 003436 MOV      RHER, ER1          : SAVE ERROR REGISTER
5714          040260 017737 143064 003442 MOV      RH1DB, TDR          : SAVE TESTER DATA REG.
5715          040266 017737 143044 003440 MOV      RHMR2, TC          : SAVE MR2 TESTER REG.
5716          040274 017737 143050 001162 MOV      RH1DB, $REGO          : GET DATA
5717          040302 032777 000200 143020 BIT      #RDY, RHCS1          : IS READY SET
5718          040310 001001          : YES, CONTINUE TEST
5719          040312 104102          : READY DID NOT SET
5720          040314 022777 177777 143010 8$: CMP      #-1, RHWC          : DID WC INCREMENT
5721          040322 001001          : YES, CONT TEST
5722          040324 104143          : READFROM OPERATION DID NOT INC WC
5723          040326 022777 004002 143000 3$: CMP      #ODDAD, RHBA          : DID BA INCREMENT

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E09

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 109
 DZRHBC.P11 T65 RH OPERATIONAL READ TEST #2

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5725 040334 001401      BEQ      4$      ;YES CONT TEST
5726 040336 104144      ERROR     144      ;BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
5727 040340 023777 004000 143002 4$: CMP      EVENAD, JRHTD6 ;DID INFO READFROM TESTER
5728 040346 001401      BEQ      5$      ;YES, CONT
5729 040350 104145      ERROR     145      ;INFO DID NOT READFROM TESTER
5730 040352 004737 007234 5$: JSR      R7, WHYFO ;ARE ANY ERROR BITS SET
5731 040356 105737 001103 TSTB     $ERFLG ;WAS THER AN ERROR
5732 040362 001402      BEQ      6$      ;NO EXIT TEST
5733 040364 104146      ERROR     146      ;THESE ARE THE CONTENTS OF ALL RH70 REG.
5734 040366 104170      ERROR     170      ;THIS IS TO COMPLETE ERROR PRINTOUT
5735 040370 004737 006602 6$: JSR      R7, CLEER ;CLEER ERRORS IF ANY
5736 040374 004737 050130 JSR      R7, ERRTST
5737
5738 *****
5739 *TEST 66 WRITE OPERATIONAL TEST (NORMAL) #1
5740 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5741 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5742 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5743 ;*NO ERRORS SHOULD OCCUR
5744 *****
5745 040400 000004      TST66: SCOPE
5746 040402 012777 000007 142730 MOV      #7, JRHCS2 ;SETUP UNIT SEVEN
5747 040410 012777 177777 142714 MOV      #-1, JRHWC ;FOR ONE WORD
5748 040416 012777 004100 142710 MOV      #RBUF, JRHBA ;SRUP BA
5749 040424 012737 125252 004100 MOV      #0AB, RBUF ;SETUP DATA
5750 040440 005701      MOV      #ZERO, JRHTD6 ;SETUP TESTER DB
5751 040442 100403      TST      R1 ;IS IT AN 11 OR A 70
5752 040444 012777 000000 142706 BMI      1$ ;IT'S AN RH11
5753 040452 012777 000061 142650 1$: MOV      #ZERO, JRHBAE ;ZERO BAE
5754 040460 005037 003446      MOV      #WRITED, JRHCS1 ;TELL IT TO WRITED
5755 040464 032777 000200 142636 18$: CLR      BITCNT ;CLEAR BIT COUNTER
5756 040472 001015      BIT      #RDY, JRHCS1 ;IS RDY SET
5757 040474 005237 003446      BNE      2$ ;BIT IS SET
5758 040500 001371      INC      BITCNT ;COUNT UP
5759 040502 005037 003446      BNE      18$ ;NOT FINISHED COUNTING
5760 040506 032777 000200 142614 19$: CLR      BITCNT ;GET READY TO DO IT AGAIN
5761 040514 001004      BIT      #RDY, JRHCS1 ;IS IT SET YET?
5762 040516 005237 003446      BNE      2$ ;YES
5763 040522 001401      INC      BITCNT ;COUNT UP
5764 040524 000770      BEQ      2$ ;BIT IS NOT GOING TO SET
5765 040526
5766 040526 017737 142576 003420 2$: MOV      JRHCS1, CS1 ;SAVE RHCS1
5767 040534 017737 142572 003444 MOV      JRHWC, WC ;SAVE WORD COUNT
5768 040542 017737 142566 003414 MOV      JRHBA, BA ;SAVE BUS ADDRESS
5769 040550 005701      TST      R1 ;IS IT AN RH11
5770 040552 001406      BEQ      B7$ ;NO IT'S A 70
5771 040554 005037 003416      CLR      BAE ;CLEAR BAE
5772 040560 005037 003424      CLR      CS3 ;CLEAR CS3
5773 040564 000137 040604      JMP      86$ ;CONTINUE
5774 040570 017737 142564 003416 B7$: MOV      JRHBAE, BAE ;SAVE BUS ADDRESS EXTENSION
5775 040576 017737 142560 003424 MOV      JRHCS3, CS3 ;SAVE RHCS3
5776 040604 017737 142530 003422 86$: MOV      JRHCS2, CS2 ;SAVE CS2
5777 040612 017737 142524 003432 MOV      JRHST, DS1 ;SAVE TESTER STATUS
5778 040620 017737 142520 003436 MOV      JRHER, ER1 ;SAVE ERROR REGISTER
5779 040626 017737 142516 003442 MOV      JRHTD6, TDR ;SAVE TESTER DATA REG.
5780 040634 017737 142476 003440 MOV      JRHMR2, TC ;SAVE MR2 TESTER REG.

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5781 040642 017737 142502 001162      MOV      2RHTDB,SREG0      ;GET DATA
5782 040650 032777 000200 142452      BIT      2RDY,2RHCS1      ;IS OR SET
5783 040656 001003                BNE      3$              ;YES RDY IS SET
5784 040660 104102                ERROR   102              ;READY DID NOT SET
5785 040662 004737 007234              JSR      R7,WHYFO        ;ARE ANY ERRORS SET
5786 040666 023777 004100 142454 3$:   CMP      RBUF,2RHTDB      ;DID INFO GET WRITTEN OR READ
5787 040674 001407                BEQ      4$              ;INFO GOT LOADED
5788 040676 005777 142446              TST      2RHTDB          ;DOES 2RHTDB = 0
5789 040702 001403                BEQ      5$              ;YES INFO DID NOT LOAD
5790 040704 104151                ERROR   151              ;ALL BITS DID NOT LOAD DURING
5791                                ;AN WRITED OPERATION
5792 040706 000137 040714              JMP      4$              ;EXIT TEST
5793 040712 104152                5$:   ERROR   152              ;WRITED OPERATION DID NOT WORK
5794                                ;NO BITS WHERE LOADED TO 2RHTDB
5795 040714 004737 007234              4$:   JSR      R7,WHYFO        ;ANY ERRORS SET
5796 040720 105737 001103              TSTB     2ERFLG          ;ANY ERRORS ?
5797 040724 001402                BEQ      6$              ;NO EXIT TEST
5798 040726 104146                ERROR   146              ;PRINT REGISTERS
5799 040730 104170                ERROR   170
5800 040732 004737 006602              6$:   JSR      R7,CLEER        ;CLEAR ERRORS
5801 040736 004737 050130              JSR      R7,ERRTST
5802                                ;*****
5803                                ;*TEST 67      RH OPERATIONAL WRITE TEST #3
5804                                ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5805                                ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5806                                ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5807                                ;*NO ERRORS SHOULD OCCUR
5808                                ;*****
5809 040742 000004                TST67: SCOPE
5810 040744 012777 000007 142366      MOV      27,2RHCS2      ;SETUP UNIT SEVEN
5811 040752 012737 125252 004000      MOV      2OAB,EVENAD    ;SETUP INFORMATION
5812 040760 012777 003003 142366      MOV      2DMD!MCLK!SLKM!ISLK,2RHMR1 ;SETUP DIAG. MODE
5813 040766 012777 177777 142336      MOV      2-1,2RHWC     ;FOR ONE WORD
5814 040774 005701                TST      R1              ;IS IT A 11 OR 70
5815 040776 100403                BMI      1$              ;IT'S AN 11
5816 041000 012777 000000 142352      MOV      2ZERO,2RHBAE   ;ZERO BAE
5817 041006 012777 004000 142320      1$:   MOV      2EVENAD,2RHBA ;SETUP BA
5818 041014 012777 000065 142306      MOV      2WRITE4,2RHCS1 ;TELL IT TO WRITETO
5819 041022 012777 003001 142324      MOV      2DMD!SLKM!ISLK,2RHMR1 ;MANIPULATE CLOCK
5820 041030 005037 003446              CLR      BITCNT        ;CLEAR LOOP COUNTER
5821 041034 005237 003446              2$:   INC      BITCNT        ;INCREMENT LOOP COUNTER
5822 041040 022737 000015 003446      CMP      215,BITCNT     ;IS IT THIRD LOOP FOR 5USEC WAIT
5823 041046 001372                BNE      2$              ;NO LOOP AGAIN
5824 041050 012777 003003 142276      MOV      2DMD!MCLK!SLKM!ISLK,2RHMR1 ;START CHANGING CLOCK
5825 041056 012777 003001 142270      MOV      2DMD!SLKM!ISLK,2RHMR1      ;CHANGE CLOCK AGAIN
5826 041064 012777 003003 142262      MOV      2DMD!MCLK!SLKM!ISLK,2RHMR1 ;CHANGE CLOCK AGAIN
5827 041072 012777 003001 142254      MOV      2DMD!SLKM!ISLK,2RHMR1      ;CHANGE CLOCK AGAIN
5828 041100 012777 000000 142246      MOV      2ZERO,2RHMR1   ;GET OUT OF DIAG MODE
5829 041106 005037 003446              CLR      BITCNT        ;CLEAR BIT COUNTER
5830 041112 032777 000200 142210 18$:  BIT      2RDY,2RHCS1      ;IS RDY SET
5831 041120 001015                BNE      7$              ;BIT IS SET
5832 041122 005237 003446              INC      BITCNT        ;COUNT UP
5833 041126 001371                BNE      18$             ;NOT FINISHED COUNTING
5834 041130 005037 003446              CLR      BITCNT        ;GET READY TO DO IT AGAIN
5835 041134 032777 000200 142166 19$:  BIT      2RDY,2RHCS1      ;IS IT SET YET?
5836 041142 001004                BNE      7$              ;YES

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5837 041144 005237 003446      INC      BITCNT      ;COUNT UP
5838 041150 001401      BEQ       7$          ;BIT IS NOT GOING TO SET
5839 041152 000770      BR        19$
5840 041154
5841 041154 017737 142150 003420 7$:      MOV      2RHCS1,CS1      ;SAVE RHCS1
5842 041162 017737 142144 003444      MOV      2RHWC,WC      ;SAVE WORD COUNT
5843 041170 017737 142140 003414      MOV      2RHBA,BA      ;SAVE BUS ADDRESS
5844 041176 005701      TST       R1      ;IS IT AN RH11
5845 041200 001406      BEQ       87$      ;NO IT'S A 70
5846 041202 005037 003416      CLR      BAE      ;CLEAR BAE
5847 041206 005037 003424      CLR      CS3      ;CLEAR CS3
5848 041212 000137 041232      JMP      86$      ;CONTINUE
5849 041216 017737 142136 003416 87$:      MOV      2RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
5850 041224 017737 142132 003424      MOV      2RHCS3,CS3      ;SAVE RHCS3
5851 041232 017737 142102 003422 86$:      MOV      2RHCS2,CS2      ;SAVE CS2
5852 041240 017737 142076 003432      MOV      2RHST,DS1      ;SAVE TESTER STATUS
5853 041246 017737 142072 003436      MOV      2RHER,ER1      ;SAVE ERROR REGISTER
5854 041254 017737 142070 003442      MOV      2RHTDB,TDR      ;SAVE TESTER DATA REG.
5855 041262 017737 142050 003440      MOV      2RHMR2,TC      ;SAVE MR2 TESTER REG.
5856 041270 017737 142054 001162      MOV      2RHTDB,$REGO      ;GET DATA
5857 041276 032777 000200 142024      BIT      2RDY,2RHCS1      ;IS READY SET
5858 041304 001001      BNE      8$          ;YES,CONTINUE TEST
5859 041306 104102      ERROR    102      ;READY DID NOT SET
5860 041310 022777 177777 142014 8$:      CMP      #-1,2RHWC      ;DID WC INCREMENT
5861 041316 001001      BNE      3$          ;YES,CONT TEST
5862 041320 104140      ERROR    140      ;WRTETO OPERATION DID NOT INC WC
5863 041322 022777 004002 142004 3$:      CMP      2ODDAD,2RHBA      ;DID BA INCREMENT
5864 041330 001401      BEQ      4$          ;YES,CONT TEST
5865 041332 104141      ERROR    141      ;BA DID NOT INCREMENT AFTER AN WRTETO OPERATION
5866 041334 023777 004000 142006 4$:      CMP      2EVENAD,2RHTDB      ;DID INFO WRTETO TESTER
5867 041342 001401      BEQ      5$          ;YES,CONT
5868 041344 104142      ERROR    142      ;INFO DID NOT WRTETO TESTER
5869 041346 004737 007234 5$:      JSR      R7,WHYFO      ;ARE ANY ERROR BITS SET
5870 041352 105737 001103      TSTB     2ERFLG      ;WAS THER AN ERROR
5871 041356 001402      BEQ      6$          ;NO EXIT TEST
5872 041360 104146      ERROR    146      ;THESE ARE THE CONTENTS OF ALL RH70 REG.
5873 041362 104170      ERROR    170      ;THIS IS TO COMPLETE ERROR PRINTOUT
5874 041364 004737 006602 6$:      JSR      R7,CLEER      ;CLEAR ERRORS IF ANY
5875 041370 004737 050130      JSR      R7,ERRTST
5876
5877
5878
5879
5880
5881
5882
5883 041374 000004      ;*****
5884 041376 012777 000007 141734 ;*TEST 70      WRITE OPERATIONAL TEST (NORMAL) #2
5885 041404 012777 177777 141720 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5886 041412 012777 004100 141714 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5887 041420 012737 125252 004100 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5888 041426 012777 000000 141714 ;*NO ERRORS SHOULD OCCUR
5889 041434 005701
5890 041436 100403
5891 041440 012777 000000 141712 ;*****
5892 041446 012777 000063 141654 ;*ST70: SCOPE
      MOV      27,2RHCS2      ;SETUP UNIT SEVEN
      MOV      #-1,2RHWC      ;FOR ONE WORD
      MOV      2RBUF,2RHBA      ;SETUP BA
      MOV      2GAB,2RBUF      ;SETUP DATA
      MOV      2ZERO,2RHTDB      ;SETUP TESTER DB
      TST      R1      ;IS IT AN 11 OR A 70
      BMI      1$          ;IT'S AN RH11
      MOV      2ZERO,2RHBAE      ;ZERO BAE
      MOV      2WRITE2,2RHCS1      ;TELL IT TO WRITE2

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5893 041454 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
5894 041460 032777 000200 141642 18$: BIT #RDY, RHCS1 ;IS RDY SET
5895 041466 001015 BNE 2$ ;BIT IS SET
5896 041470 005237 003446 INC BITCNT ;COUNT UP
5897 041474 001371 BNE 18$ ;NOT FINISHED COUNTING
5898 041476 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
5899 041502 032777 000200 141620 19$: BIT #RDY, RHCS1 ;IS IT SET YET?
5900 041510 001004 BNE 2$ ;YES
5901 041512 005237 003446 INC BITCNT ;COUNT UP
5902 041516 001401 BEQ 2$ ;BIT IS NOT GOING TO SET
5903 041520 000770 BR 19$
5904 041522 2$:
5905 041522 017737 141602 003420 MOV RHCS1, CS1 ;SAVE RHCS1
5906 041530 017737 141576 003444 MOV RHWC, WC ;SAVE WORD COUNT
5907 041536 017737 141572 003414 MOV RHBA, BA ;SAVE BUS ADDRESS
5908 041544 005701 TST R1 ;IS IT AN RH11
5909 041546 001406 BEQ 87$ ;NO IT'S A 70
5910 041550 005037 003416 CLR BAE ;CLEAR BAE
5911 041554 005037 003424 CLR CS3 ;CLEAR CS3
5912 041560 000137 041600 JMP 86$ ;CONTINUE
5913 041564 017737 141570 003416 87$: MOV RHBAE, BAE ;SAVE BUS ADDRESS EXTENSION
5914 041572 017737 141564 003424 MOV RHCS3, CS3 ;SAVE RHCS3
5915 041600 017737 141534 003422 86$: MOV RHCS2, CS2 ;SAVE CS2
5916 041606 017737 141530 003432 MOV RHST, DS1 ;SAVE TESTER STATUS
5917 041614 017737 141524 003436 MOV RHER, ER1 ;SAVE ERROR REGISTER
5918 041622 017737 141522 003442 MOV RHDTB, TOR ;SAVE TESTER DATA REG.
5919 041630 017737 141502 003440 MOV RHMR2, TC ;SAVE MR2 TESTER REG.
5920 041636 017737 141506 001162 MOV RHDTB, $REGO ;GET DATA
5921 041644 032777 000200 141456 BIT #RDY, RHCS1 ;IS OR SET
5922 041652 001003 BNE 3$ ;YES RDY IS SET
5923 041654 104102 ERROR 102 ;READY DID NOT SET
5924 041656 004737 007234 JSR R7, WHYFO ;ARE ANY ERRORS SET
5925 041662 023777 004100 141460 3$: CMP RBUF, RHDTB ;DID INFO GET WRITTEN OR READ
5926 041670 001407 BEQ 4$ ;INFO GOT LOADED
5927 041672 005777 141452 TST RHDTB ;DOES RHDTB = 0
5928 041676 001403 BEQ 5$ ;YES INFO DID NOT LOAD
5929 041700 104151 ERROR 151 ;ALL BITS DID NOT LOAD DURING
5930 ;AN WRITE2 OPERATION
5931 041702 000137 041710 JMP 4$ ;EXIT TEST
5932 041706 104152 5$: ERROR 152 ;WRITE2 OPERATION DID NOT WORK
5933 ;NO BITS WERE LOADED TO RHDTB
5934 041710 004737 007234 4$: JSR R7, WHYFO ;ANY ERRORS SET
5935 041714 105737 001103 TSTB $ERFLG ;ANY ERRORS ?
5936 041720 001402 BEQ 6$ ;NO, EXIT TEST
5937 041722 104146 ERROR 146 ;PRINT REGISTERS
5938 041724 104170 ERROR 170
5939 041726 004737 006602 6$: JSR R7, CLEER ;CLEAR ERRORS
5940 041732 004737 050130 JSR R7, EARTST
5941 ;*****
5942 ;*TEST 71 RH OPERATIONAL READ TEST #3
5943 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5944 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5945 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5946 ;*NO ERRORS SHOULD OCCUR
5947 ;*****
5948 041736 000004 †T71: SCOPE

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5949	041740	012777	000007	141372	MOV	#7, ARHCS2	; SETUP UNIT SEVEN
5950	041746	012777	052525	141374	MOV	#AB, ARHTDB	; SETUP INFORMATION
5951	041754	012777	003003	141372	MOV	#DMD, SLKM, ISLK, MCLK, ARHMR1	; SETUP DIAG. MODE
5952	041762	012777	177777	141342	MOV	#-1, ARHWC	; FOR ONE WORD
5953	041770	005701			R1		; IS IT A 11 OR 70
5954	041772	100403			BMI	15	; IT'S AN 11
5955	041774	012777	000000	141356	MOV	#ZERO, ARHBAE	; ZERO BAE
5956	042002	012777	004000	141324	MOV	#EVENAD, ARHBA	; SETUP BA
5957	042010	012777	000075	141312	MOV	#READY, ARHCS1	; TELL IT TO READFROM
5958	042016	012777	003001	141330	MOV	#DMD, SLKM, ISLK, ARHMR1	; MANIPULATE CLOCK
5959	042024	005037	003446		CLR	BITCNT	; CLEAR LOOP COUNTER
5960	042030	005237	003446		INC	BITCNT	; INCREMENT LOOP COUNTER
5961	042034	022737	000015	003446	CMP	#15, BITCNT	; IS IT THIRD LOOP FOR 5USEC WAIT
5962	042042	001372			BNE	25	; NO LOOP AGAIN
5963	042044	012777	003003	141302	MOV	#DMD, SLKM, ISLK, MCLK, ARHMR1	; START CHANGING CLOCK
5964	042052	012777	003001	141274	MOV	#DMD, SLKM, ISLK, ARHMR1	; CHANGE CLOCK AGAIN
5965	042060	012777	003003	141266	MOV	#DMD, SLKM, ISLK, MCLK, ARHMR1	; CHANGE CLOCK AGAIN
5966	042066	012777	003001	141260	MOV	#DMD, SLKM, ISLK, ARHMR1	; CHANGE CLOCK AGAIN
5967	042074	012777	000000	141252	MOV	#ZERO, ARHMR1	; GET OUT OF DIAG MODE
5968	042102	005037	003446		CLR	BITCNT	; CLEAR BIT COUNTER
5969	042106	032777	000200	141214	BIT	#RDY, ARHCS1	; IS RDY SET
5970	042114	001015			BNE	75	; BIT IS SET
5971	042116	005237	003446		INC	BITCNT	; COUNT UP
5972	042122	001371			BNE	185	; NOT FINISHED COUNTING
5973	042124	005037	003446		CLR	BITCNT	; GET READY TO DO IT AGAIN
5974	042130	032777	000200	141172	BIT	#RDY, ARHCS1	; IS IT SET YET?
5975	042136	001004			BNE	75	; YES
5976	042140	005237	003446		INC	BITCNT	; COUNT UP
5977	042144	001401			BEQ	75	; BIT IS NOT GOING TO SET
5978	042146	000770			BR	195	
5979	042150						
5980	042150	017737	141154	003420	MOV	ARHCS1, CS1	; SAVE RHCS1
5981	042156	017737	141150	003444	MOV	ARHWC, WC	; SAVE WORD COUNT
5982	042164	017737	141144	003414	MOV	ARHBA, BA	; SAVE BUS ADDRESS
5983	042172	005701			TST	R1	; IS IT AN RH11
5984	042174	001406			BEQ	875	; NO IT'S A 70
5985	042176	005037	003416		CLR	BAE	; CLEAR BAE
5986	042202	005037	003424		CLR	CS3	; CLEAR CS3
5987	042206	000137	042226		JMP	865	; CONTINUE
5988	042212	017737	141142	003416	MOV	ARHBAE, BAE	; SAVE BUS ADDRESS EXTENSION
5989	042220	017737	141136	003424	MOV	ARHCS3, CS3	; SAVE RHCS3
5990	042226	017737	141106	003422	MOV	ARHCS2, CS2	; SAVE CS2
5991	042234	017737	141102	003432	MOV	ARHST, DS1	; SAVE TESTER STATUS
5992	042242	017737	141076	003436	MOV	ARHER, ER1	; SAVE ERROR REGISTER
5993	042250	017737	141074	003442	MOV	ARHTDB, TDR	; SAVE TESTER DATA REG.
5994	042256	017737	141054	003440	MOV	ARHMR2, TC	; SAVE MR2 TESTER REG.
5995	042264	017737	141060	001162	MOV	ARHTDB, SREGO	; GET DATA
5996	042272	032777	000200	141030	BIT	#RDY, ARHCS1	; IS READY SET
5997	042300	001001			BNE	85	; YES, CONTINUE TEST
5998	042302	104102			ERROR	102	; READY DID NOT SET
5999	042304	022777	177777	141020	CMP	#-1, ARHWC	; DID WC INCREMENT
6000	042312	001001			BNE	35	; YES, CONT TEST
6001	042314	104143			ERROR	143	; READFROM OPERATION DID NOT INC WC
6002	042316	022777	004002	141010	CMP	#00DAD, ARHBA	; DID BA INCREMENT
6003	042324	001401			BEQ	45	; YES CONT TEST
6004	042326	104144			ERROR	144	; BA DID NOT INCREMENT AFTER AN READFROM OPERATIO

J09

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 114
 DZRHBC.P11 T71 RH OPERATIONAL READ TEST #3

6005	042330	023777	004000	141012	45:	CMP	EVENAD, 0RHTDB	;DID INFO READFROM TESTER
6006	042336	001401				BEQ	55	;YES, CONT
6007	042340	104145				ERROR	145	;INFO DID NOT READFROM TESTER
6008	042342	004737	007234		55:	JSR	R7, WHYFO	;ARE ANY ERROR BITS SET
6009	042346	105737	001103			TSTB	SERFLG	;WAS THER AN ERROR
6010	042352	001402				BEQ	65	;NO EXIT TEST
6011	042354	104146				ERROR	146	;THESE ARE THE CONTENTS OF ALL RH70 REG.
6012	042356	104170				ERROR	170	;THIS IS TO COMPLETE ERROR PRINTOUT
6013	042360	004737	006602		65:	JSR	R7, CLEER	;CLEER ERRORS IF ANY
6014	042364	004737	050130			JSR	R7, EARTST	

K09

MASSEBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 T72MACY11 27(732) 01-OCT-76 09:03 PAGE 115
WRITE OPERATIONAL TEST (NORMAL) #3

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6015
6016
6017
6018
6019
6020
6021
6022 042370 000004
6023 042372 012777 000007 140740
6024 042400 012777 177777 140724
6025 042406 012777 004100 140720
6026 042414 012737 125252 004100
6027 042422 012777 000000 140720
6028 042430 005701
6029 042432 100403
6030 042434 012777 000000 140716
6031 042442 012777 000065 140660 15:
6032 042450 005037 003446
6033 042454 032777 000200 140646 185:
6034 042462 001015
6035 042464 005237 003446
6036 042470 001371
6037 042472 005037 003446
6038 042476 032777 000200 140624 195:
6039 042504 001004
6040 042506 005237 003446
6041 042512 001401
6042 042514 000770
6043 042516
6044 042516 017737 140606 003420
6045 042524 017737 140602 003444
6046 042532 017737 140576 003414
6047 042540 005701
6048 042542 001406
6049 042544 005037 003416
6050 042550 005037 003424
6051 042554 000137 042574
6052 042560 017737 140574 003416 875:
6053 042566 017737 140570 003424
6054 042574 017737 140540 003422 865:
6055 042602 017737 140534 003432
6056 042610 017737 140530 003436
6057 042616 017737 140526 003442
6058 042624 017737 140506 003440
6059 042632 017737 140512 001162
6060 042640 032777 000200 140462
6061 042646 001003
6062 042650 104102
6063 042652 004737 007234
6064 042656 023777 004100 140464 35:
6065 042664 001407
6066 042666 005777 140456
6067 042672 001403
6068 042674 104151
6069
6070 042676 000137 042704

;*****
;*TEST 72 WRITE OPERATIONAL TEST (NORMAL) #3
;*THESE TESTS VERIFY ALL READ AND WRITE CODES
;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
;*NO ERRORS SHOULD OCCUR
;*****
TST72: SCOPE
MOV #7, RHCS2 ; SETUP UNIT SEVEN
MOV #1, RHWC ; FOR ONE WORD
MOV #RBUF, RHBA ; SETUP BA
MOV #OAB, RBUF ; SETUP DATA
MOV #ZERO, RHTDB ; SETUP TESTER DB
TST R1 ; IS IT AN 11 OR A 70
BNE 15 ; IT'S AN RH11
MOV #ZERO, RHBAE ; ZERO BAE
MOV #WRITE4, RHCS1 ; TELL IT TO WRITE4
CLR BITCNT ; CLEAR BIT COUNTER
BIT #RDY, RHCS1 ; IS RDY SET
BNE 25 ; BIT IS SET
INC BITCNT ; COUNT UP
BNE 185 ; NOT FINISHED COUNTING
CLR BITCNT ; GET READY TO DO IT AGAIN
BIT #RDY, RHCS1 ; IS IT SET YET?
BNE 25 ; YES
INC BITCNT ; COUNT UP
BEQ 25 ; BIT IS NOT GOING TO SET
BR 195

25:
MOV RHCS1, CS1 ; SAVE RHCS1
MOV RHWC, WC ; SAVE WORD COUNT
MOV RHBA, BA ; SAVE BUS ADDRESS
TST R1 ; IS IT AN RH11
BEQ 875 ; NO IT'S A 70
CLR BAE ; CLEAR BAE
CLR CS3 ; CLEAR CS3
JMP 865 ; CONTINUE

875: MOV RHBAE, BAE ; SAVE BUS ADDRESS EXTENSION
MOV RHCS3, CS3 ; SAVE RHCS3
865: MOV RHCS2, CS2 ; SAVE CS2
MOV RHST, DS1 ; SAVE TESTER STATUS
MOV RHERR, ER1 ; SAVE ERROR REGISTER
MOV RHTDB, TDR ; SAVE TESTER DATA REG.
MOV RHMR2, TC ; SAVE MR2 TESTER REG.
MOV RHTDB, $REGO ; GET DATA
BIT #RDY, RHCS1 ; IS OR SET
BNE 35 ; YES RDY IS SET
ERROR 102 ; READY DID NOT SET
JSR R7, WHYFO ; ARE ANY ERRORS SET
CMP RBUF, RHTDB ; DID INFO GET WRITTEN OR READ
BEQ 45 ; INFO GOT LOADED
TST RHTDB ; DOES RHTDB = 0
BEQ 55 ; YES INFO DID NOT LOAD
ERROR 151 ; ALL BITS DID NOT LOAD DURING
; AN WRITE4 OPERATION
JMP 45 ; EXIT TEST

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6071	042702	104152		55:	ERROR	152		;WRITE4 OPERATION DID NOT WORK
6072								;NO BITS WERE LOADED TO 2RHTDB
6073	042704	004737	007234	45:	JSR	R7,WHYFO		;ANY ERRORS SET
6074	042710	105737	001103		TSTB	5ERFLG		;ANY ERRORS ?
6075	042714	001402			BEQ	65		;NO EXIT TEST
6076	042716	104146			ERROR	146		;PRINT REGISTERS
6077	042720	104170			ERROR	170		
6078	042722	004737	006602	65:	JSR	R7,CLEER		;CLEAR ERRORS
6079	042726	004737	050130		JSR	R7,ERRST		
6080								
6081								
6082								
6083								
6084								
6085								
6086								
6087	042732	000004						
6088	042734	012777	000007					
6089	042742	012737	125252					
6090	042750	012777	000003					
6091	042756	012777	177777					
6092	042764	005701						
6093	042766	100403						
6094	042770	012777	000000					
6095	042776	012777	004000	15:	MOV	#ZERO,2RHBAE		;ZERO BAE
6096	043004	012777	000067		MOV	#EVENAD,2RHBA		;SETUP BA
6097	043012	012777	000001		MOV	#WRITE6,2RHCS1		;TELL IT TO WRITETO
6098	043020	005037	003446		MOV	#DMD,2RHMR1		;MANIPULATE CLOCK
6099	043024	005237	003446		CLR	BITCNT		;CLEAR LOOP COUNTER
6100	043030	022737	000015	25:	INC	BITCNT		;INCREMENT LOOP COUNTER
6101	043036	001372			CMP	#15,BITCNT		;IS IT THIRD LOOP FOR SUSEC WAIT
6102	043040	012777	000003		BNE	25		;NO LOOP AGAIN
6103	043046	012777	000001		MOV	#DMD!MCLK,2RHMR1		;START CHANGING CLOCK
6104	043054	012777	000003		MOV	#DMD,2RHMR1		;CHANGE CLOCK AGAIN
6105	043062	012777	000001		MOV	#DMD!MCLK,2RHMR1		;CHANGE CLOCK AGAIN
6106	043070	012777	000001		MOV	#DMD,2RHMR1		;CHANGE CLOCK AGAIN
6107	043076	005037	003446		MOV	#ZERO,2RHMR1		;GET OUT OF DIAG MODE
6108	043102	032777	000200	185:	CLR	BITCNT		;CLEAR BIT COUNTER
6109	043110	001015			BIT	#RDY,2RHCS1		;IS RDY SET
6110	043112	005237	003446		BNE	75		;BIT IS SET
6111	043116	001371			INC	BITCNT		;COUNT UP
6112	043120	005037	003446		BNE	185		;NOT FINISHED COUNTING
6113	043124	032777	000200	195:	CLR	BITCNT		;GET READY TO DO IT AGAIN
6114	043132	001004			BIT	#RDY,2RHCS1		;IS IT SET YET?
6115	043134	005237	003446		BNE	75		;YES
6116	043140	001401			INC	BITCNT		;COUNT UP
6117	043142	000770			BEQ	75		;BIT IS NOT GOING TO SET
6118	043144			75:	BR	195		
6119	043144	017737	140160		MOV	2RHCS1,CS1		;SAVE RHCS1
6120	043152	017737	140154		MOV	2RHWC,WC		;SAVE WORD COUNT
6121	043160	017737	140150		MOV	2RHBA,BA		;SAVE BUS ADDRESS
6122	043166	005701			TST	R1		;IS IT AN RH11
6123	043170	001406			BEQ	875		;NO IT'S A 70
6124	043172	005037	003416		CLR	BAE		;CLEAR BAE
6125	043176	005037	003424		CLR	CS3		;CLEAR CS3
6126	043202	000137	043222		JMP	865		;CONTINUE

;*****
 ;*TEST 73 RH OPERATIONAL WRITE TEST #4
 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 ;*NO ERRORS SHOULD OCCUR
 ;*****

;*ST73: SCOPE
 MOV #7,2RHCS2 ;SETUP UNIT SEVEN
 MOV #0AB,EVENAD ;SETUP INFORMATION
 MOV #DMD!MCLK,2RHMR1 ;SETUP DIAG. MODE
 MOV #-1,2RHWC ;FOR ONE WORD
 TST R1 ;IS IT A 11 OR 70
 BMI 15 ;IT'S AN 11
 MOV #ZERO,2RHBAE ;ZERO BAE
 MOV #EVENAD,2RHBA ;SETUP BA
 MOV #WRITE6,2RHCS1 ;TELL IT TO WRITETO
 MOV #DMD,2RHMR1 ;MANIPULATE CLOCK
 CLR BITCNT ;CLEAR LOOP COUNTER
 INC BITCNT ;INCREMENT LOOP COUNTER
 CMP #15,BITCNT ;IS IT THIRD LOOP FOR SUSEC WAIT
 BNE 25 ;NO LOOP AGAIN
 MOV #DMD!MCLK,2RHMR1 ;START CHANGING CLOCK
 MOV #DMD,2RHMR1 ;CHANGE CLOCK AGAIN
 MOV #DMD!MCLK,2RHMR1 ;CHANGE CLOCK AGAIN
 MOV #DMD,2RHMR1 ;CHANGE CLOCK AGAIN
 MOV #ZERO,2RHMR1 ;GET OUT OF DIAG MODE
 CLR BITCNT ;CLEAR BIT COUNTER
 BIT #RDY,2RHCS1 ;IS RDY SET
 BNE 75 ;BIT IS SET
 INC BITCNT ;COUNT UP
 BNE 185 ;NOT FINISHED COUNTING
 CLR BITCNT ;GET READY TO DO IT AGAIN
 BIT #RDY,2RHCS1 ;IS IT SET YET?
 BNE 75 ;YES
 INC BITCNT ;COUNT UP
 BEQ 75 ;BIT IS NOT GOING TO SET
 BR 195

6127	043206	017737	140146	003416	87\$:	MOV	2RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
6128	043214	017737	140142	003424		MOV	2RHCS3,CS3	:SAVE RHCS3
6129	043222	017737	140112	003422	86\$:	MOV	2RHCS2,CS2	:SAVE CS2
6130	043230	017737	140106	003432		MOV	2RHST,DS1	:SAVE TESTER STATUS
6131	043236	017737	140102	003436		MOV	2RHER,ER1	:SAVE ERROR REGISTER
6132	043244	017737	140100	003442		MOV	2RHTDB,TDR	:SAVE TESTER DATA REG.
6133	043252	017737	140060	003440		MOV	2RHMR2,TC	:SAVE MR2 TESTER REG.
6134	043260	017737	140064	001162		MOV	2RHTDB,\$REGD	:GET DATA
6135	043266	032777	000200	140034		BIT	2RDY,2RHCS1	:IS READY SET
6136	043274	001001				BNE	8\$	:YES,CONTINUE TEST
6137	043276	104102				ERROR	102	:READY DID NOT SET
6138	043300	022777	177777	140024	8\$:	CMP	2-1,2RHWC	:DID WC INCREMENT
6139	043306	001001				BNE	3\$	:YES,CONT TEST
6140	043310	104140				ERROR	140	:WRITETO OPERATION DID NOT INC WC
6141	043312	022777	003776	140014	3\$:	CMP	2EVENAD-2,2RHBA	:DID BA INCREMENT
6142	043320	001401				BEQ	4\$	:YES,CONT TEST
6143	043322	104141				ERROR	141	:BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
6144	043324	023777	004000	140016	4\$:	CMP	2EVENAD,2RHTDB	:DID INFO WRITETO TESTER
6145	043332	001401				BEQ	5\$	:YES,CONT
6146	043334	104142				ERROR	142	:INFO DID NOT WRITETO TESTER
6147	043336	004737	007234		5\$:	JSR	2R7,WHYFO	:ARE ANY ERROR BITS SET
6148	043342	105737	001103			TSTB	2SERFLG	:WAS THER AN ERROR
6149	043346	001402				BEQ	6\$	:NO EXIT TEST
6150	043350	104146				ERROR	146	:THESE ARE THE CONTENTS OF ALL RH70 REG.
6151	043352	104170				ERROR	170	:THIS IS TO COMPLETE ERROR PRINTOUT
6152	043354	004737	006602		6\$:	JSR	2R7,CLEER	:CLEER ERRORS IF ANY
6153	043360	004737	050130			JSR	2R7,ERRTST	
6154								
6155								
6156								
6157								
6158								
6159								
6160								
6161	043364	000004						
6162	043366	012777	000007	137744		MOV	27,2RHCS2	:SETUP UNIT SEVEN
6163	043374	012777	177777	137730		MOV	2-1,2RHWC	:FOR ONE WORD
6164	043402	012777	004100	137724		MOV	2RBUF,2RHBA	:SATUP BA
6165	043410	012737	125252	004100		MOV	2OAB,RBUF	:SETUP DATA
6166	043416	012777	000000	137724		MOV	2ZERO,2RHTDB	:SETUP TESTER DB
6167	043424	005701				TST	2R1	:IS IT AN 11 OR A 70
6168	043426	100403				BMI	1\$	:IT'S AN RH11
6169	043430	012777	000000	137722		MOV	2ZERO,2RHBAE	:ZERO BAE
6170	043436	012777	000067	137664	1\$:	MOV	2WRITE6,2RHCS1	:TELL IT TO WRITE6
6171	043444	005037	003446			CLR	2BITCNT	:CLEAR BIT COUNTER
6172	043450	032777	000200	137652	18\$:	BIT	2RDY,2RHCS1	:IS RDY SET
6173	043456	001015				BNE	2\$	:BIT IS SET
6174	043460	005237	003446			INC	2BITCNT	:COUNT UP
6175	043464	001371				BNE	18\$	:NOT FINISHED COUNTING
6176	043466	005037	003446			CLR	2BITCNT	:GET READY TO DO IT AGAIN
6177	043472	032777	000200	137630	19\$:	BIT	2RDY,2RHCS1	:IS IT SET YET?
6178	043500	001004				BNE	2\$	:YES
6179	043502	005237	003446			INC	2BITCNT	:COUNT UP
6180	043506	001401				BEQ	2\$	:BIT IS NOT GOING TO SET
6181	043510	000770				BR	19\$	
6182	043512				2\$:			

 :TEST 74 WRITE OPERATIONAL TEST (NORMAL) #4
 :THESE TESTS VERIFY ALL READ AND WRITE CODES
 :WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 :DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 :NO ERRORS SHOULD OCCUR

 :TST74: SCOPE
 :MOV 27,2RHCS2 :SETUP UNIT SEVEN
 :MOV 2-1,2RHWC :FOR ONE WORD
 :MOV 2RBUF,2RHBA :SATUP BA
 :MOV 2OAB,RBUF :SETUP DATA
 :MOV 2ZERO,2RHTDB :SETUP TESTER DB
 :TST 2R1 :IS IT AN 11 OR A 70
 :BMI 1\$:IT'S AN RH11
 :MOV 2ZERO,2RHBAE :ZERO BAE
 :MOV 2WRITE6,2RHCS1 :TELL IT TO WRITE6
 :CLR 2BITCNT :CLEAR BIT COUNTER
 :BIT 2RDY,2RHCS1 :IS RDY SET
 :BNE 2\$:BIT IS SET
 :INC 2BITCNT :COUNT UP
 :BNE 18\$:NOT FINISHED COUNTING
 :CLR 2BITCNT :GET READY TO DO IT AGAIN
 :BIT 2RDY,2RHCS1 :IS IT SET YET?
 :BNE 2\$:YES
 :INC 2BITCNT :COUNT UP
 :BEQ 2\$:BIT IS NOT GOING TO SET
 :BR 19\$

6183	043512	017737	137612	003420		MOV	2RHCS1,CS1	:SAVE RHCS1
6184	043520	017737	137606	003444		MOV	2RHWC,WC	:SAVE WORD COUNT
6185	043526	017737	137602	003414		MOV	2RHBA,BA	:SAVE BUS ADDRESS
6186	043534	005701				TST	R1	:IS IT AN RH11
6187	043536	001406				BEQ	87\$	:NO IT'S A 70
6188	043540	005037	003416			CLR	BAE	:CLEAR BAE
6189	043544	005037	003424			CLR	CS3	:CLEAR CS3
6190	043550	000137	043570			JMP	86\$	:CONTINUE
6191	043554	017737	137600	003416	87\$:	MOV	2RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
6192	043562	017737	137574	003424		MOV	2RHCS3,CS3	:SAVE RHCS3
6193	043570	017737	137544	003422	86\$:	MOV	2RHCS2,CS2	:SAVE CS2
6194	043576	017737	137540	003432		MOV	2RHST,DS1	:SAVE TESTER STATUS
6195	043604	017737	137534	003436		MOV	2RHER,ER1	:SAVE ERROR REGISTER
6196	043612	017737	137532	003442		MOV	2RHTDB,TDR	:SAVE TESTER DATA REG.
6197	043620	017737	137512	003440		MOV	2RHMR2,TC	:SAVE MR2 TESTER REG.
6198	043626	017737	137516	001162		MOV	2RHTDB,\$REGO	:GET DATA
6199	043634	032777	000200	137466		BIT	#RDY,2RHCS1	:IS OR SET
6200	043642	001003				BNE	3\$	:YES RDY IS SET
6201	043644	104102				ERROR	102	:READY DID NOT SET
6202	043646	004737	007234			JSR	R7,WHYFO	:ARE ANY ERRORS SET
6203	043652	023777	004100	137470	3\$:	CMP	RBUF,2RHTDB	:DID INFO GET WRITTEN OR READ
6204	043660	001407				BEQ	4\$	:INFO GOT LOADED
6205	043662	005777	137462			TST	2RHTDB	:DOES 2RHTDB = 0
6206	043666	001403				BEQ	5\$	:YES INFO DID NOT LOAD
6207	043670	104117				ERROR	117	:ALL BITS DID NOT LOAD DURING
6208								:AN WRITE6 OPERATION
6209	043672	000137	043700			JMP	4\$	:EXIT TEST
6210	043676	104101			5\$:	ERROR	101	:WRITE6 OPERATION DID NOT WORK
6211								:NO BITS WERE LOADED TO 2RHTDB
6212	043700	004737	007234		4\$:	JSR	R7,WHYFO	:ANY ERRORS SET
6213	043704	105737	001103			TSTB	\$ERFLG	:ANY ERRORS ?
6214	043710	001402				BEQ	6\$	:NO EXIT TEST
6215	043712	104146				ERROR	146	:PRINT REGISTERS
6216	043714	104170				ERROR	170	
6217	043716	004737	006602		6\$:	JSR	R7,CLEER	:CLEAR ERRORS
6218	043722	004737	050130			JSR	R7,ERRTST	
6219								
6220								
6221								
6222								
6223								
6224								
6225								
6226	043726	000004						
6227	043730	012777	000007	137402		MOV	#7,2RHCS2	:SETUP UNIT SEVEN
6228	043736	012777	052525	137404		MOV	#AB,2RHTDB	:SETUP INFORMATION
6229	043744	012777	000003	137402		MOV	#DMO!MCLK,2RHMR1	:SETUP DIAG. MODE
6230	043752	012777	177777	137352		MOV	#-1,2RHWC	:FOR ONE WORD
6231	043760	005701				TST	R1	:IS IT A 11 OR 70
6232	043762	100403				BMI	1\$	:IT'S AN 11
6233	043764	012777	000000	137366		MOV	#ZERO,2RHBAE	:ZERO BAE
6234	043772	012777	004000	137334	1\$:	MOV	#EVENAD,2RHBA	:SETUP BA
6235	044000	012777	000077	137322		MOV	#READ6,2RHCS1	:TELL IT TO READFROM
6236	044006	012777	000001	137340		MOV	#DMO,2RHMR1	:MANIPULATE CLOCK
6237	044014	005037	003446			CLR	BITCNT	:CLEAR LOOP COUNTER
6238	044020	005237	003446		2\$:	INC	BITCNT	:INCREMENT LOOP COUNTER

:*****
 :*TEST 75 RH OPERATIONAL READ TEST #4
 :*THESE TESTS VERIFY ALL READ AND WRITE CODES
 :*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 :*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 :*NO ERRORS SHOULD OCCUR
 :*****
 :*ST75: SCOPE
 :*****

6239	044024	022737	000015	003446	CMP	#15,BITCNT	:IS IT THIRD LOOP FOR SUSEC WAIT
6240	044032	001372			BNE	25	:NO LOOP AGAIN
6241	044034	012777	000003	137312	MOV	#DMC!MCLK,ARHMR1	:START CHANGING CLOCK
6242	044042	012777	000001	137304	MOV	#DMC,ARHMR1	:CHANGE CLOCK AGAIN
6243	044050	012777	000003	137276	MOV	#DMC!MCLK,ARHMR1	:CHANGE CLOCK AGAIN
6244	044056	012777	000001	137270	MOV	#DMC,ARHMR1	:CHANGE CLOCK AGAIN
6245	044064	012777	000000	137262	MOV	#ZERO,ARHMR1	:GET OUT OF DIAG MODE
6246	044072	005037	003446		CLR	BITCNT	:CLEAR BIT COUNTER
6247	044076	032777	000200	137224	BIT	#RDY,ARHCS1	:IS RDY SET
6248	044104	001015			BNE	75	:BIT IS SET
6249	044106	005237	003446		INC	BITCNT	:COUNT UP
6250	044112	001371			BNE	185	:NOT FINISHED COUNTING
6251	044114	005037	003446		CLR	BITCNT	:GET READY TO DO IT AGAIN
6252	044120	032777	000200	137202	BIT	#RDY,ARHCS1	:IS IT SET YET?
6253	044126	001004			BNE	75	:YES
6254	044130	005237	003446		INC	BITCNT	:COUNT UP
6255	044134	001401			BEQ	75	:BIT IS NOT GOING TO SET
6256	044136	000770			BR	195	
6257	044140						
6258	044140	017737	137164	003420	MOV	ARHCS1,CS1	:SAVE RHCS1
6259	044146	017737	137160	003444	MOV	ARHWC,WC	:SAVE WORD COUNT
6260	044154	017737	137154	003414	MOV	ARHBA,BA	:SAVE BUS ADDRESS
6261	044162	005701			TST	R1	:IS IT AN RH11
6262	044164	001406			BEQ	875	:NO IT'S A 70
6263	044166	005037	003416		CLR	BAE	:CLEAR BAE
6264	044172	005037	003424		CLR	CS3	:CLEAR CS3
6265	044176	000137	044216		JMP	865	:CONTINUE
6266	044202	017737	137152	003416	MOV	ARHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
6267	044210	017737	137146	003424	MOV	ARHCS3,CS3	:SAVE RHCS3
6268	044216	017737	137116	003422	MOV	ARHCS2,CS2	:SAVE CS2
6269	044224	017737	137112	003432	MOV	ARHST,DS1	:SAVE TESTER STATUS
6270	044232	017737	137106	003436	MOV	ARHER,ER1	:SAVE ERROR REGISTER
6271	044240	017737	137104	003442	MOV	ARHTDB,TDR	:SAVE TESTER DATA REG.
6272	044246	017737	137064	003440	MOV	ARHMR2,TC	:SAVE MR2 TESTER REG.
6273	044254	017737	137070	001162	MOV	ARHTDB,\$REGD	:GET DATA
6274	044262	032777	000200	137040	BIT	#RDY,ARHCS1	:IS READY SET
6275	044270	001001			BNE	85	:YES,CONTINUE TEST
6276	044272	104102			ERROR	102	:READY DID NOT SET
6277	044274	022777	177777	137030	CMP	#-1,ARHWC	:DID WC INCREMENT
6278	044302	001001			BNE	35	:YES,CONT TEST
6279	044304	104143			ERROR	143	:READFROM OPERATION DID NOT INC WC
6280	044306	022777	003776	137020	CMP	#EVENAD-2,ARHBA	:DID BA INCREMENT
6281	044314	001401			BEQ	45	:YES,CONT TEST
6282	044316	104144			ERROR	144	:BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
6283	044320	023777	004000	137022	CMP	EVENAD,ARHTDB	:DID INFO READFROM TESTER
6284	044326	001401			BEQ	55	:YES,CONT
6285	044330	104145			ERROR	145	:INFO DID NOT READFROM TESTER
6286	044332	004737	007234		JSR	R7,WHYFO	:ARE ANY ERROR BITS SET
6287	044336	105737	001103		TSTB	\$ERFLG	:WAS THER AN ERROR
6288	044342	001402			BEQ	65	:NO EXIT TEST
6289	044344	104146			ERROR	146	:THESE ARE THE CONTENTS OF ALL RH70 REG.
6290	044346	104170			ERROR	170	:THIS IS TO COMPLETE ERROR PRINTOUT
6291	044350	004737	006602		JSR	R7,CLEER	:CLEAR ERRORS IF ANY
6292	044354	004737	050130		JSR	R7,ERRTST	
6293							
6294							

:TEST 76 LARGE TRANSFER TEST

```

:THIS TEST DOES A 4K (OCTAL) WORD TRANSFER
:THE SECOND TIME THROUGH THE TEST SYNC CLOCK
:IS MARGINED TO MAKE SURE NO ERRORS OCCUR
*****
†TST76: SCOPE

      MOV      #7, @RHCS2
      CLR      @PSW
      CLR      PASS
BLITZ: CLR      LOOCNT           ;CLEAR THE LOOP COUNTER
IN:   TST      R1              ;IS IT AN 11 OR 70
      BMI      1$              ;IT IS AN 11
      MOV      @ZERO, @RHBAE    ;IT'S A 70 ZERO THE BAE
1$:   MOV      #5000, @RHBA     ;SET THE BUS ADDRESS
      MOV      #-4000, @RHWC
      MOV      @BLKTST, @VECAD0 ;USE IT IN INTERRUPT MODE

      TST      R1
      BEQ      BLIP
      TST      PASS
      BEQ      BLIP
      BIT      @BIT1, @177570
      BNE      BOTTOM
      JSR      R7, @DUPORT
      BR       @RHNINT
BLIP: MOV      @WRITED!IE, @RHCS1 ;SET INTERRUPT AND TELL IT T

      CLR      BITCNT           ;CLEAR BIT COUNTER
18$:  BIT      @RDY, @RHCS1     ;IS RDY SET
      BNE      2$              ;BIT IS SET
      INC      BITCNT          ;COUNT UP
      BNE      18$             ;NOT FINISHED COUNTING
19$:  CLR      BITCNT          ;GET READY TO DO IT AGAIN
      BIT      @RDY, @RHCS1     ;IS IT SET YET?
      BNE      2$              ;YES
      INC      BITCNT          ;COUNT UP
      BEQ      2$              ;BIT IS NOT GOING TO SET
      BR       19$

2$:   BIT      @RDY, @RHCS1     ;DID READY SET
      BNE      25$             ;YES READY SET
25$:  ERROR    102             ;READY DID NOT SET
      ERROR    205             ;IT DID NOT INTERRUPT
RHNINT: MOV     @RHCS1, CS1      ;SAVE RHCS1
      MOV     @RHWC, WC         ;SAVE WORD COUNT
      MOV     @RHBA, BA        ;SAVE BUS ADDRESS
      TST     R1               ;IS IT AN RH11
      BEQ     @7$              ;NO IT'S A 70
      CLR     @BAE             ;CLEAR BAE
      CLR     CS3              ;CLEAR CS3
      JMP     @86$             ;CONTINUE
@7$:  MOV     @RHBAE, @BAE      ;SAVE BUS ADDRESS EXTENSION
      MOV     @RHCS3, CS3      ;SAVE RHCS3
@86$: MOV     @RHCS2, CS2      ;SAVE CS2

```

```
:THIS TEST DOES A 4K (OCTAL) WORD TRANSFER
:THE SECOND TIME THROUGH THE TEST SYNC CLOCK
:IS MARGINED TO MAKE SURE NO ERRORS OCCUR
```

```

*****
IST76:  SCOPE

```

BLITZ:	CLR	LOOPCNT	: CLEAR THE LOOP COUNTER
IN:	TST	R1	: IS IT AN 11 OR 70
	BMI	15	: IT IS AN 11
	MOV	#ZERO, 2RHBAE	: IT'S A 70 ZERO THE BAE
15:	MOV	#5000, 2RHBA	: SET THE BUS ADDRESS
	MOV	#-4000, 2RHWC	
	MOV	#BLKTST, 2VECAD0	: USE IT IN INTERRUPT MOD

```
BLIP:      MOV      R0, R1          ;SET INTERRUPT AND TELL IT TO WRITE
```

185:	CLR BIT BNE INC BNE CLR	BITCNT RDY, DRHCS1 25 BITCNT 185 BITCNT	: CLEAR BIT COUNTER : IS RDY SET : BIT IS SET : COUNT UP : NOT FINISHED COUNTING : GET READY TO DO IT AGAIN
195:	BIT BNE INC BEQ BR	RDY, DRHCS1 25 BITCNT 25 195	: IS IT SET YET? : YES : COUNT UP : BIT IS NOT GOING TO SET

```

23:      BIT      #RDY,DRHCS1      ;DID READY SET
      BNE      25$              ;YES READY SET
      ERROR    102              ;READY DID NOT SET
25$:    ERROR    205              ;IT DID NOT INTERRUPT

```

```

MOV      JRHCS1,CS1      ;SAVE RHCS1
MOV      JRHWC,WC        ;SAVE WORD COUNT
MOV      JRHBA,BA        ;SAVE BUS ADDRESS
TST      R1              ;IS IT AN RH11
BEQ      B7$             ;NO IT'S A 70
CLR      BAE             ;CLEAR BAE
CLR      CS3             ;CLEAR CS3
JMP      B6$             ;CONTINUE
B7$:     MOV      JRHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
MOV      JRHCS3,CS3      ;SAVE RHCS3
B6$:     MOV      JRHCS2,CS2 ;SAVE CS2

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6351 044644 017737 136472 003432      MOV      2RHST,DS1      ;SAVE TESTER STATUS
6352 044652 017737 136466 003436      MOV      2RHER,ERI     ;SAVE ERROR REGISTER
6353 044660 017737 136464 003442      MOV      2RHTDB,TDR    ;SAVE TESTER DATA REG.
6354 044666 017737 136444 003440      MOV      2RHMR2,TC     ;SAVE MR2 TESTER REG.
6355 044674 032777 140000 136440 95:   BIT      2ATA!ERR,2RHST ;IS ATTEN OR ERROR SET
6356 044702 001033          BNE      35      ;YES THERE WAS A PROBLEM
6357 044704 032777 000200 136416      BIT      2RDY,2RHCS1    ;DID RDY SET
6358 044712 001001          BNE      45      ;YES IT SET
6359 044714 104102          ERROR    102     ;RDY DID NOT SET
6360 044716 022777 015000 136410 45:   CMP      25000+(4000*2),2RHBA ;DID BA INC PROPERLY
6361 044724 001401          BEQ      55      ;YES
6362 044726 104203          ERROR    203     ;BA DID NOT INC PROPERLY
6363 044730 022777 015006 136412 55:   CMP      25006,2RHTDB      ;WAS CORRECT INFO WRITTEN
6364 044736 001401          BEQ      65      ;YES
6365 044740 104204          ERROR    204     ;CORRECT INFO NOT IN RHTDB
6366 044742 005777 136364          TST      2RHWC      ;IS WC 0
6367 044746 001401          BEQ      75      ;YES
6368 044750 104206          ERROR    206     ;RHWC IS NOT ZERO
6369 044752 105737 001103 75:   TSTB     2SERFLG      ;WAS THERE ANY ERRORS
6370 044756 001407          BEQ      85      ;NO
6371 044760 032777 002000 136342      BIT      2PSEL,2RHCS1
6372 044766 001401          BEQ      35
6373 044770 104207          ERROR    207
6374 044772 104146 35:   ERROR    146      ;OUTPUT THE REGISTERS
6375 044774 104170          ERROR    170
6376 044776 005737 003450 85:   TST      2LOOCNT      ;IS IT FIRST PASS IN TEST
6377 045002 001007          BNE      115     ;NO
6378 045004 005237 003450          INC      2LOOCNT      ;MAKE IT SECOND PASS
6379 045010 012777 000017 136320      MOV      2SCLK!7,2RHMR2
6380          ;SET THE SYNC CLOCK BIT AND 441 BLK SIZE
6381 045016 000137 044404          JMP      IN
6382 045022 005037 003450 115:   CLR      2LOOCNT      ;DO THE TEST AGAIN
6383 045026 005737 003452          TST      2PASS
6384 045032 001004          BNE      2BOTTOM
6385 045034 005237 003452          INC      2PASS
6386 045040 000137 044400          JMP      2BLITZ
6387 045044 004737 007234 BOTTOM:   JSR      2R7,WHYFO      ;TO SEE WHY IT DIED
6388 045050 004737 006602          JSR      2R7,CLEER      ;CLEAR THE REGISTERS
6389 045054 004737 050130          JSR      2R7,ERRST      ;UNDERLINE ERROR MESGES
6390          ;IF NEEDED
6391          ;*****
6392          ;TEST 77      HERE IS WHERE I HANDLE 4 RH'S
6393          ;*THIS IS THE ROUTINE THAT ALLOWS THE
6394          ;*THE DIAGNOSTIC TO TEST FOUR RH'S
6395          ;*****
6396 045060 000004          TST77:   SCOPE
6397
6398 045062 005237 003376          ENDPAS: INC      2DEVCNT      ;INCREMENT THE DEVICE COUNT
6399 045066 022737 000001 003376      CMP      21,2DEVCNT    ;IS IT DEVICE 2
6400 045074 001552          BEQ      2CLEVER      ;YES
6401 045076 022737 000002 003376      CMP      22,2DEVCNT    ;IS IT DEVICE 3
6402 045104 001002          BNE      15
6403 045106 000137 045524          JMP      2ROTEEN      ;YES
6404 045112 022737 000003 003376 15:   CMP      23,2DEVCNT    ;IS IT DEVICE 4
6405 045120 001002          BNE      25      ;NO, CONTINUE SEARCH
6406 045122 000137 045630          JMP      15      ;YES

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6407 045126 022737 000004 003376 25:  CMP      #4,DEVONT      ;HAVE WE TESTED ALL 4 RH'S
6408 045134 001470          BEQ      RESTAT      ;YES
6409 045136 104401 045144  TYPE      65$      ;:TYPE ASCII STRING
6410 045142 000421          BR       64$      ;:GET OVER THE ASCII
6411          ;:65$: .ASCIIZ <15><12>/PROGRAM ERROR ON TESTING 4 RH'S/
6412 045206          ;:64$:
6413 045206 104401 045214  TYPE      67$      ;:TYPE ASCII STRING
6414 045212 000426          BR       66$      ;:GET OVER THE ASCII
6415          ;:67$: .ASCIIZ <15><12>/RESTARTING TO TEST RH #1 AT BASE ADDRESS /
6416 045270          ;:66$:
6417 045270 013746 003366  MOV      DEVIC1,-(SP)  ;:SAVE DEVIC1 FOR TYPEOUT
6418 045274 104402          TYPOC          ;:GO TYPE--OCTAL ASCII(ALL DIGITS)
6419 045276 013737 003366 003400 MOV      DEVIC1,DEVIC5 ;:FOR REG. ADDRESS CREATION
6420 045304 012777 005260 136076 MOV      #GIGO,ARETAIN ;:GET ADDRESS ERROR RETURN
6421 045312 000137 045734  JMP      CORREG      ;:CORRECT REG. ADDRESSES
6422 045316 005037 003376  RESTAT: CLR      DEVCNT      ;:CLEAR DEVICE COUNTER
6423 045322 005726          TST      (SP)+      ;:CORRECT STACK
6424 045324 013737 003366 003400 MOV      DEVIC1,DEVIC5 ;:SET UP TO CREATE ADDRESSES
6425 045332 104401 045340  TYPE      65$      ;:TYPE ASCII STRING
6426 045336 000421          BR       64$      ;:GET OVER THE ASCII
6427          ;:65$: .ASCIIZ <15><12>/TESTING RH #1 AT BASE ADDRESS /
6428 045402          ;:64$:
6429 045402 013746 003366  MOV      DEVIC1,-(SP)  ;:SAVE DEVIC1 FOR TYPEOUT
6430 045406 104402          TYPOC          ;:GO TYPE--OCTAL ASCII(ALL DIGITS)
6431 045410 012777 005260 135772 MOV      #GIGO,ARETAIN ;:SAVE RETURN ADDRESS
6432 045416 000137 045734  JMP      CORREG      ;:GO CREATE ADDRESSES
6433 045422 005737 003370  CLEVER: TST      DEVIC2      ;:IS IT 0
6434 045426 001733          BEQ      RESTAT      ;:YES,END PASS
6435 045430 013737 003370 003400 MOV      DEVIC2,DEVIC5 ;:GET READY TO CONSTRUCT
6436 045436 012746 005434  MOV      #GIGO1,-(SP) ;:SAVE RETURN ERROR ADDRESS
6437 045442 104401 045450  TYPE      65$      ;:TYPE ASCII STRING
6438 045446 000421          BR       64$      ;:GET OVER THE ASCII
6439          ;:65$: .ASCIIZ <15><12>/TESTING RH #2 AT BASE ADDRESS /
6440 045512          ;:64$:
6441 045512 013746 003370  MOV      DEVIC2,-(SP)  ;:SAVE DEVIC2 FOR TYPEOUT
6442 045516 104402          TYPOC          ;:GO TYPE--OCTAL ASCII(ALL DIGITS)
6443 045520 000137 045734  JMP      CORREG      ;:CREATE REG. ADDRESSES
6444 045524 005737 003372  ROTEEN: TST      DEVIC3      ;:IS IT 0
6445 045530 001672          BEQ      RESTAT      ;:YES,END PASS
6446 045532 013737 003372 003400 MOV      DEVIC3,DEVIC5 ;:GET BASE ADDRESS
6447 045540 012777 005574 135642 MOV      #GIGO2,ARETAIN ;:SAVE RETURN ADDRESS
6448 045546 104401 045554  TYPE      65$      ;:TYPE ASCII STRING
6449 045552 000421          BR       64$      ;:GET OVER THE ASCII
6450          ;:65$: .ASCIIZ <15><12>/TESTING RH #3 AT BASE ADDRESS /
6451 045616          ;:64$:
6452 045616 013746 003372  MOV      DEVIC3,-(SP)  ;:SAVE DEVIC3 FOR TYPEOUT
6453 045622 104402          TYPOC          ;:GO TYPE--OCTAL ASCII(ALL DIGITS)
6454 045624 000137 045734  JMP      CORREG      ;:CORRECT REG. ADDRESSES
6455 045630 005737 003374  IS:      TST      DEVIC4      ;:IS IT 0
6456 045634 001630          BEQ      RESTAT      ;:YES,END PASS
6457 045636 013737 003374 003400 MOV      DEVIC4,DEVIC5 ;:GET BASE ADDRESS
6458 045644 012777 005734 135536 MOV      #GIGO3,ARETAIN ;:SAVE RETURN ADDRESS
6459 045652 104401 045660  TYPE      65$      ;:TYPE ASCII STRING
6460 045656 000421          BR       64$      ;:GET OVER THE ASCII
6461          ;:65$: .ASCIIZ <15><12>/TESTING RH #4 AT BASE ADDRESS /
6462 045722          ;:64$:

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F10

MASSBUS RM70 AND RM11 DIAGNOSTIC
DZRMBC.P11 T77

MACY11 27(732)
HERE IS WHERE I HANDLE 4 RH'S

01-OCT-76 09:03 PAGE 123

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6463 045722 013746 003374      MOV    DEVIC4,-(SP)      ;;SAVE DEVIC4 FOR TYPEOUT
6464 045726 104402      TYPDC      ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6465 045730 000137 045734      JMP     CORREG      ;;CORRECT REG. ADDRESSES
6466 045734 013737 003400 003402 CORREG: MOV    DEVIC5,OFF11      ;;GET BASE ADDRESS
6467 045742 012702 003330      MOV    RHCS1,R2      ;;GET ADDRESS TO START STORING
6468 045746 013722 003402      BEHIND: MOV   OFF11,(R2)+      ;;STORE ADDRESS
6469 045752 022702 003360      CMP     RHBAE,R2      ;;WAS IT LAST ADDRESS
6470 045756 001405      BEQ     AHEAD      ;;YES
6471 045760 062737 000002 003402      ADD     #TWO,OFF11      ;;CREATE NEXT ADDRESS
6472 045766 000137 045746      JMP     BEHIND      ;;GO STORE IT
6473 045772 013737 003400 003402 AHEAD: MOV    DEVIC5,#OFF11      ;;SETUP BAE ADDRESS
6474 046000 063737 003404 003402      ADD     REGEND,OFF11      ;;STORE ADDRESS
6475 046006 013737 003402 003360      MOV     OFF11,RHBAE      ;;SETUP CS3 ADDRESS
6476 046014 062737 000002 003402      ADD     #2,OFF11      ;;SAVE THE ADDRESS
6477 046022 013737 003402 003362      MOV     OFF11,RHCS3      ;;SETUP HIGH BYTE
6478 046030 013737 003330 003364      MOV     RHCS1,RHCS1B      ;;FOR RHCS1
6479 046036 005237 003364      INC     RHCS1B      ;;CLEAR TEST NUMBER
6480 046042 005037 001102      CLR     $STNM      ;;SET TO TEST 1
6481 046046 005237 001102      INC     $STNM      ;;FOR ONE ITERATION
6482 046052 012737 000001 001212      MOV     #1,$TIMES      ;;ARE WE AT END OF PASS
6483 046060 005737 003376      TST     DEVCNT      ;;YES DO END OF PASS
6484 046064 001402      BEQ     $EOP      ;;NO,SEE IF RH IS PRESENT
6485 046066 000137 006264      JMP     TSTADD
6486      .SBTTL    END OF PASS ROUTINE

*****
*INCREMENT THE PASS NUMBER ($PASS)
*TYPE "END PASS #XXXXX TOTAL NUMBER OF ERRORS SINCE LAST REPORT YYYYY"
*WHERE XXXXX AND YYYYY ARE DECIMAL NUMBERS
*IF THERES A MONITOR GO TO IT
*IF THERE ISN'T JUMP TO BEGIN2

$EOP:
        SCOPE
        CLR     $STNM      ;;ZERO THE TEST NUMBER
        CLR     $TIMES      ;;ZERO THE NUMBER OF ITERATIONS
        INC     $PASS      ;;INCREMENT THE PASS NUMBER
        BIC     #100000,$PASS      ;;DON'T ALLOW A NEG. NUMBER
        DEC     (PC)+      ;;LOOP?
$EOPCT: .WORD    1
        BGT     $DOAGN      ;;YES
        MOV     (PC)+,#2(PC)+      ;;RESTORE COUNTER
$ENDCT: .WORD    1
        $EOPCT
        TYPE    65$      ;;TYPE ASCII STRING
        BR      64$      ;;GET OVER THE ASCIIZ
;;65$: .ASCIIZ  <12><15>/END PASS #/
64$:
        MOV     $PASS,-(SP)      ;;SAVE $PASS FOR TYPEOUT
        TYPDS      ;;TYPE PASS NUMBER
        TYPE    67$      ;;GO TYPE--DECIMAL ASCII WITH SIGN
        BR      66$      ;;TYPE ASCII STRING
;;67$: .ASCIIZ  / TOTAL ERRORS SINCE LAST REPORT /
66$:
        MOV     $ERTTL,-(SP)      ;;SAVE $ERTTL FOR TYPEOUT

```



```

6519                                     ;; TOTAL NUMBER OF ERRORS
6520 046240 104405                                     ;; GO TYPE--DECIMAL ASCII WITH SIGN
6521 046242 104401 001223                                     ;; TYPE CARRIAGE RETURN, LINE FEED
6522 046246 005037 001112                                     ;; CLEAR ERROR TOTAL
6523 046252 013700 000042 $GET42: MOV 2*42,RO ;; GET MONITOR ADDRESS
6524 046256 001405 $DOAGN ;; BRANCH IF NO MONITOR
6525 046260 000005 RESET ;; CLEAR THE WORLD
6526 046262 004710 $ENDAD: JSR PC,(RO) ;; GO TO MONITOR
6527 046264 000240 NOP ;; SAVE ROOM
6528 046266 000240 NOP ;; FOR
6529 046270 000240 NOP ;; ACT11
6530 046272 $DOAGN: JMP 2(PC)+ ;; RETURN
6531 046272 000137 $RTNAD: .WORD BEGIN2
6532 046274 004166 $ENULL: .BYTE -1,-1,0 ;; NULL CHARACTER STRING
6533 046276 377 000
6534 046302
6535
6536                                     ;; *****
6537                                     ;; THIS IS THE WATBIT PROGRAM
6538                                     ;; *****
6539
6540 046302 032737 020000 177570 WATBIT: BIT 2*SW13,2*177570 ;; SKIP ERROR PRINTOUT ?
6541 046310 001155 BNE RITURN ;; YES
6542 046312 033737 000400 177570 BIT 2*BIT8,2*177570
6543 046320 001151 BNE RITURN
6544 046322 033737 000001 177570 BIT 2*BIT0,2*177570
6545 046330 001145 BNE RITURN
6546 046332 005037 003446 CLR BITCNT ;; CLEAR BIT COUNTER
6547 046336 013737 001162 001202 MOV $REG0,$TMP2 ;; SAVE GOOD DATA IN $REG0
6548 046344 013737 001200 001204 MOV $TMP1,$TMP3 ;; SAVE CONTENTS OF BAD DATA
6549 046352 043737 001162 001204 BIC $REG0,$TMP3 ;; WHERE EXTRA BITS SET ?
6550 046360 005737 001204 TST $TMP3 ;; FIND OUT
6551 046364 001447 BEQ NEXTST ;; NO, FIND OUT WHAT BITS WHERE NOT SET
6552 046366 104401 046374 TYPE 655 ;; TYPE ASCII STRING
6553 046372 000427 BR 645 ;; GET OVER THE ASCII
6554
6555                                     ;; 655: .ASCIIZ <15><12>/THESE ARE THE BIT NO. OF THE EXTRA BITS./<15><12>
6556 046452 032737 000001 001204 645: MOAR: BIT 2*ONE,$TMP3 ;; FIND THE EXTRA
6557 046460 001076 BNE PRIBIT ;; GO TO PRINT BIT NO.
6558 046462 006037 001204 MOOR: ROR $TMP3 ;; SETUP FOR NEXT BIT
6559 046466 022737 000017 003446 CMP 2*17,BITCNT ;; IS IT BIT 15 LAST TESTED
6560 046474 001403 BEQ NEXTST ;; YES, SEE IF ANY BITS WHERE NOT SET
6561 046476 005237 003446 INC BITCNT ;; NO NOT LAST BIT YET
6562 046502 000763 BR MOAR ;; GO TO TEST NEXT BIT
6563 046504 005037 003446 NEXTST: CLR BITCNT ;; ZERO BIT COUNTER
6564 046510 043737 001200 001202 BIC $TMP1,$TMP2 ;; FIND WHAT BITS WHERE NOT SET
6565 046516 005737 001202 TST $TMP2 ;; WAS ALL BITS SET THAT SHOULD HAVE BEEN
6566 046522 001446 BEQ RETURN ;; YES, AND TEST FINISHED
6567 046524 104401 046532 TYPE 655 ;; TYPE ASCII STRING
6568 046530 000426 BR 645 ;; GET OVER THE ASCII
6569
6570                                     ;; 655: .ASCIIZ <15><12>/BIT NO. OF THE BITS THAT WHERE NOT SET/<15><12>
6571 046606 032737 000001 001202 645: MORE2: BIT 2*ONE,$TMP2 ;; FIND BIT NOT SET
6572 046614 001014 BNE PRIBIT ;; ERROR BIT FOUND
6573 046616 006037 001202 MORE: ROR $TMP2 ;; SETUP TO FIND MORE
6574 046622 022737 000017 003446 CMP 2*17,BITCNT ;; WAS LAST BIT BIT 15

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H10

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 125

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6575 046630 001403
6576 046632 005237 003446
6577 046636 000763
6578 046640 104401 001223
6579 046644 000207
6580 046646
6581 046646 013746 003446
6582 046652 104405
6583 046654 000760
6584 046656
6585 046656 013746 003446
6586 046662 104405
6587 046664 000676
6588
6589
6590
6591
6592 046666
6593 046666 104401 046674
6594 046672 000434
6595
6596 046764
6597 046764 104401 046772
6598 046770 000422
6599
6600 047036
6601 047036 012637 001206
6602 047042 162737 000002 001206
6603 047050 013746 001206
6604 047054 104402
6605 047056 104401 047064
6606 047062 000406
6607
6608 047100
6609 047100 012637 001206
6610 047104 013746 001206
6611 047110 104402
6612 047112 013716 001106
6613 047116 000002
6614
6615
6616
6617
6618
6619 047120
6620 047120 104401 047126
6621 047124 000422
6622
6623 047172
6624 047172 104401 047200
6625 047176 000420
6626
6627 047240
6628 047240 012637 004100
6629 047244 162737 000002 004100
6630 047252 013746 004100

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BEQ RETURN ;YES AND TEST FINISHED
INC BITCNT ;NO SETUP FOR NEXT BIT
BR MORE2 ;CONTINUE TEST
RETURN: TYPE SCRLF
RITURN: RTS R7 ;RETURN TO MAIN PROG.
PRIBIT: MOV BITCNT, -(SP) ;;SAVE BITCNT FOR TYPEOUT
TYPDS ;;GO TYPE--DECIMAL ASCII WITH SIGN
BR MORE ;LOOK FOR MORE
PRIBIT: MOV BITCNT, -(SP) ;;SAVE BITCNT FOR TYPEOUT
TYPDS ;;GO TYPE--DECIMAL ASCII WITH SIGN
BR MOOR ;LOOK FOR MORE
;;*****
;;THIS ROUTINE HANDLES TIMEOUT ERRORS
;;*****
TIMEOUT:
TYPE 65$ ;;TYPE ASCII STRING
BR 64$ ;;GET OVER THE ASCII
;;65$: .ASCIIZ <15><12><12>/PROGRAM INSTRUCTION OR ADDRESS HAS CREATED A TIMEOUT/
64$:
TYPE 67$ ;;TYPE ASCII STRING
BR 66$ ;;GET OVER THE ASCII
;;67$: .ASCIIZ <15><12>/ADDRESS WHICH CAUSED TIMEOUT WAS /
66$:
MOV (SP)+, $TMP4 ;MOVE ADDRESS TO STORAGE
SUB #TWO, $TMP4 ;CORRECT ADDRESS
MOV $TMP4, -(SP) ;;SAVE $TMP4 FOR TYPEOUT
TYPDC ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
TYPE 69$ ;;TYPE ASCII STRING
BR 68$ ;;GET OVER THE ASCII
;;69$: .ASCIIZ <15><12>/PSW WAS /
68$:
MOV (SP)+, $TMP4 ;GET OLD PSW
MOV $TMP4, -(SP) ;;SAVE $TMP4 FOR TYPEOUT
TYPDC ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
MOV $LPADR, (SP) ;FAKE RETURN
RTI
;;*****
;;THIS ROUTINE HANDLES PARITY ERRORS
;;*****
PARITY:
TYPE 65$ ;;TYPE ASCII STRING
BR 64$ ;;GET OVER THE ASCII
;;65$: .ASCIIZ <15><12>/PARITY TRAP TO VECTOR ADDRESS 114/
64$:
TYPE 67$ ;;TYPE ASCII STRING
BR 66$ ;;GET OVER THE ASCII
;;67$: .ASCIIZ <15><12>/ADDRESS THAT CAUSED TRAP WAS /
66$:
MOV (SP)+, RBUF ;GET PC+2
SUB #TWO, RBUF ;CORRECT PC
MOV RBUF, -(SP) ;;SAVE RBUF FOR TYPEOUT

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6631 047256 104402          TYP0C          ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6632 047260 104401 047266  TYPE          69$      ;;TYPE ASCII STRING
6633 047264 000406          BR          68$      ;;GET OVER THE ASCIIZ
6634          ;;69$: .ASCIIZ <15><12>/PSW WAS /
6635 047302          68$:
6636 047302 012637 004100  MOV      (SP)+,RBUF          ;GET OLD PSW
6637 047306 013746 004100  MOV      RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
6638 047312 104402          TYP0C          ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6639 047314 005701          TST      R1          ;ARE WE ON AN 11/70
6640 047316 100507          BMI      TRAPED        ;NO ITS A 11/05-11/45
6641 047320 104401 047326  TYPE          71$      ;;TYPE ASCII STRING
6642 047324 000417          BR          70$      ;;GET OVER THE ASCIIZ
6643          ;;71$: .ASCIIZ <15><12>/HIGH ERROR ADDRESS REG. = /
6644 047364          70$:
6645 047364 013737 177742 004100  MOV      HERADD,RBUF
6646 047372 013746 004100  MOV      RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
6647 047376 104402          TYP0C          ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6648 047400 104401 047406  TYPE          73$      ;;TYPE ASCII STRING
6649 047404 000416          BR          72$      ;;GET OVER THE ASCIIZ
6650          ;;73$: .ASCIIZ <15><12>/LOW ERROR ADDRESS REG. = /
6651 047442          72$:
6652 047442 013737 177740 004100  MOV      LERADD,RBUF
6653 047450 013746 004100  MOV      RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
6654 047454 104402          TYP0C          ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6655 047456 104401 047464  TYPE          75$      ;;TYPE ASCII STRING
6656 047462 000417          BR          74$      ;;GET OVER THE ASCIIZ
6657          ;;75$: .ASCIIZ <15><12>/MEMORY SYSTEM ERROR REG. = /
6658 047522          74$:
6659 047522 013737 177744 004100  MOV      MEMERR,RBUF
6660 047530 013746 004100  MOV      RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
6661 047534 104402          TYP0C          ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6662 047536 013716 001106  TRAPED: MOV      $LPADR,(SP)      ;FAKE RETURN
6663 047542 000002          RTI          ;RETURN WHERE LEFT OFF
6664
6665          ;;*****
6666          ;THIS IS THE DUAL PORT ROUTINE
6667          ;;*****
6668 047544 012777 002161 133556  DUPORT: MOV      #WRITED!PSEL!IE,DRHCS1
6669 047552 005037 003446          CLR      BITCNT          ;CLEAR BIT COUNTER
6670 047556 032777 000200 133544 18$: BIT      #RDY,DRHCS1      ;IS RDY SET
6671 047564 001015          BNE      BULL          ;BIT IS SET
6672 047566 005237 003446          INC      BITCNT          ;COUNT UP
6673 047572 001371          BNE      18$          ;NOT FINISHED COUNTING
6674 047574 005037 003446          CLR      BITCNT          ;GET READY TO DO IT AGAIN
6675 047600 032777 000200 133522 19$: BIT      #RDY,DRHCS1      ;IS IT SET YET?
6676 047606 001004          BNE      BULL          ;YES
6677 047610 005237 003446          INC      BITCNT          ;COUNT UP
6678 047614 001401          BEQ      BULL          ;BIT IS NOT GOING TO SET
6679 047616 000770          BR          19$
6680 047620          BULL:
6681 047620 032777 000200 133502          BIT      #RDY,DRHCS1
6682 047626 001401          BEQ      CUTE
6683 047630 104102          ERROR      102
6684 047632 000207          CUTE:   RTS      PC
6685
6686          ;;*****
          ;THESE ARE THE CLEARS ROUTINES

```



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6687      ;*****
6688
6689 047634 012737 000000 001162 FINDIT: MOV    #0,$REG0          ;GET READY TO FIND ERROR
6690 047642 017737 133462 001200      MOV    @RHCS1,$TMP1      ;GET COMPARE READY
6691 047650 042737 007777 001200      BIC     @READ6!GO!IE!RDY!A16!A17!PSEL!DVA,$TMP1
6692      ;CLEAR BITS NOT NEEDED
6693 047656 000207      RTS     R7          ;RETURN TO PROGRAM
6694 047650 012737 000000 001162 LOOKFO: MOV    #0,$REG0          ;GET READY TO FIND ERROR
6695 047666 017737 133446 001200      MOV    @RHCS2,$TMP1      ;GET COMPARE READY
6696 047674 042737 000377 001200      BIC     @US1!US2!US4!BAI!PAT!CLR!IR!OR,$TMP1
6697      ;CLEAR BITS NOT NEEDED
6698 047702 000207      RTS     R7          ;RETURN TO PROGRAM
6699 047704 012737 000000 001162 LOCKED: MOV    #0,$REG0          ;GET READY TO FIND ERROR
6700 047712 017737 133426 001200      MOV    @RHER,$TMP1      ;GET COMPARE READY
6701 047720 042737 000000 001200      BIC     @ZERO,$TMP1
6702      ;CLEAR BITS NOT NEEDED
6703 047726 000207      RTS     R7          ;RETURN TO PROGRAM
6704 047730 012737 000000 001162 FIND:   MOV    #0,$REG0          ;GET READY TO FIND ERROR
6705 047736 017737 133400 001200      MOV    @RHST,$TMP1      ;GET COMPARE READY
6706 047744 042737 030600 001200      BIC     @DRY!DPR!MOL!PIP,$TMP1
6707      ;CLEAR BITS NOT NEEDED
6708 047752 000207      RTS     R7          ;RETURN TO PROGRAM
6709 047754 012737 000007 001162 FOUND:  MOV    #7,$REG0          ;GET READY TO FIND ERROR
6710 047762 017737 133352 001200      MOV    @RHCS2,$TMP1      ;GET COMPARE READY
6711 047770 042737 177770 001200      BIC     @BAI!PAT!CLR!IR!OR!MPE!MXF!PGE!NEM!NED!UPE!WCE!DLT,$TMP1
6712      ;CLEAR BITS NOT NEEDED
6713 047776 000207      RTS     R7          ;RETURN TO PROGRAM
6714 050000 012737 000000 001162 CS3ERR: MOV    #0,$REG0          ;GET READY TO FIND ERROR
6715 050006 017737 133350 001200      MOV    @RHCS3,$TMP1      ;GET COMPARE READY
6716 050014 042737 000117 001200      BIC     @IE3!IPCK0!IPCK1!IPCK2!IPCK3,$TMP1
6717      ;CLEAR BITS NOT NEEDED
6718 050022 000207      RTS     R7          ;RETURN TO PROGRAM
6719
6720      ;*****
6721      ;* THIS ROUTINE IS THE TEST NUMBER CORRECTION ROUTINE
6722      ;*****
6723
6724 050024 013737 001102 003454 TSTNMB: MOV    $TSTNM,$TSTNM      ;GET THE TEST NUMBER
6725 050032 105037 003455      CLRB     $TSTNM+1      ;CLEAR UPPER BYTE
6726 050036 032737 020000 177570      BIT     @SW13,@177570      ;INHIBIT TYPEOUT
6727 050044 001026      BNE     $TSTNMA      ;YES
6728 050046 122737 000001 001103      CMPB    @1,$ERFLG      ;IS IT FIRST ERROR
6729 050054 001022      BNE     $TSTNMA      ;NO
6730 050056 013737 003454 003456      MOV     $TSTNM,$OFFSET      ;GET TEST NUMBER
6731 050064 006137 003456      ROL      $OFFSET      ;CREAT OFFSET
6732 050070 012737 072332 003460      MOV     @HEADER,$HEDDAD      ;GET BEGINING OF TABLE
6733 050076 063737 003456 003460      ADD     $OFFSET,$HEDDAD      ;CREATE MES ADDRESS
6734 050104 017737 133350 050120      MOV     @HEDDAD,$HEDADD      ;SET UP FOR MESSAGE
6735 050112 104401 001223      TYPE    $CRLF
6736 050116 104401      TYPE
6737 050120 000000      HEDADD: 0
6738 050122 004737 074050      TSTNMA: JSR    R7,@$ERRTYP      ;GO TO ERROR TYPE ROUTINE
6739 050126 000207      RTS     R7          ;RETURN TO ERROR ROUTINE
6740
6741      ;*****
6742      ;THIS PROGRAM WHILL DEVIDE THE ERROR

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K10

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 128

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6743                                     :PRINTOUT BETWEEN TESTS
6744                                     ;;*****
6745                                     :
6746 050130 105737 001103 ERRATST: TSTB SERFLG :WAS THERE AN ERROR FOUND
6747 050134 001446 BEQ OUTOF :NO GO TO NEXT TEST
6748 050136 032737 020000 177570 BIT #SW13,2#177570 :INHIBIT TYPEOUT ?
6749 050144 001042 BNE OUTOF :YES
6750 050146 013737 001102 003454 MOV $TSTNM,TSTNM :GET TEST NO.
6751 050154 105037 003455 CLRB TSTNM+1 :CLEAR UPPER BYTE
6752 050160 104401 050166 TYPE 65$ ;;TYPE ASCII STRING
6753 050164 000406 BR 64$ ;;GET OVER THE ASCIIZ
6754 ;;65$: .ASCIIZ <15><12>/++++TEST /
6755 64$:
6756 050202 013746 003454 MOV TSTNM,-(SP) ;;SAVE TSTNM FOR TYPEOUT
6757 050206 104402 TYPOC ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6758 050210 104401 050216 TYPE 67$ ;;TYPE ASCII STRING
6759 050214 000416 BR 66$ ;;GET OVER THE ASCIIZ
6760 ;;67$: .ASCIIZ / ERROR MESSAGE(5) +++++/15><12><12><12>
6761 66$:
6762 050252 000207 OUTOF: RTS R7
6763
6764 ;;*****
6765 :THIS IS THE INTERRUPT ROUTINE
6766 :FOR THE LARGE TRANSFER TEST
6767 ;;*****
6768
6769 050254 012716 044560 BLKTST: MOV #RHNINT,(SP) :SET THE CORRET RETURN
6770 050260 000002 RTI :AND RETURN

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L10

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 129

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6771
6772
6773
6774
6775 050262 044122 040440 042104
6776 050270 042522 051523 042040
6777 050276 041505 042117 020105
6778 050304 042524 052123 024040
6779 050312 042524 052123 030440
6780 050320 000051
6781 050322 046103 040505 020122
6782 050330 052040 051505 020124
6783 050336 052050 051505 020124
6784 050344 024462 000
6785 050347 124 051505 042524
6786 050354 020122 047503 047116
6787 050362 041505 042524 020104
6788 050370 042524 052123 024040
6789 050376 042524 052123 031440
6790 050404 000051
6791 050406 047527 042122 041440
6792 050414 052517 052116 041440
6793 050422 042514 051101 052040
6794 050430 051505 020124 052050
6795 050436 051505 020124 024464
6796 050444 000
6797 050445 122 041110 020101
6798 050452 046103 040505 020122
6799 050460 042524 052123 024040
6800 050466 042524 052123 032440
6801 050474 000051
6802 050476 044122 040502 020105
6803 050504 046103 040505 020122
6804 050512 042524 052123 024040
6805 050520 042524 052123 033040
6806 050526 000051
6807 050530 044122 041104 041440
6808 050536 042514 051101 052040
6809 050544 051505 020124 052050
6810 050552 051505 020124 024467
6811 050560 000
6812 050561 120 047522 020115
6813 050566 042522 044507 052123
6814 050574 051105 042040 041505
6815 050602 042117 020105 042524
6816 050610 052123 024040 042524
6817 050616 052123 030440 024460
6818 050624 000
6819 050625 122 041510 031523
6820 050632 041040 052111 052040
6821 050640 051505 020124 052050
6822 050646 051505 020124 030461
6823 050654 000051
6824 050656 044122 041527 041040
6825 050664 052111 052040 051505
6826 050672 020124 052050 051505

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;;*****
;;HEADER MESSAGES FOR ERROR PRINT OUTS
;;*****

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HED1: .ASCIZ/RH ADDRESS DECODE TEST (TEST 1)/

HED2: .ASCIZ/CLEAR TEST (TEST 2)/

HED3: .ASCIZ/TESTER CONNECTED TEST (TEST 3)/

HED4: .ASCIZ/WORD COUNT CLEAR TEST (TEST 4)/

HED5: .ASCIZ/RHBA CLEAR TEST (TEST 5)/

HED6: .ASCIZ/RHBAE CLEAR TEST (TEST 6)/

HED7: .ASCIZ/RHDB CLEAR TEST (TEST 7)/

HED10: .ASCIZ/PROM REGISTER DECODE TEST (TEST 10)/

HED11: .ASCIZ/RHCS3 BIT TEST (TEST 11)/

HED12: .ASCIZ/RHWC BIT TEST (TEST 12)/

M10

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 130

6827	050700	020124	031061	000051	
6828	050706	044122	040502	020105	HED13: .ASCIZ/RHBAE BIT TEST (TEST 13)/
6829	050714	044502	020124	042524	
6830	050722	052123	024040	042524	
6831	050730	052123	030440	024463	
6832	050736	000			
6833	050737	122	041110	020101	HED14: .ASCIZ/RHBA BIT TEST (TEST 14)/
6834	050744	044502	020124	042524	
6835	050752	052123	024040	042524	
6836	050760	052123	030440	024464	
6837	050766	000			
6838	050767	122	042110	020102	HED15: .ASCIZ/RHDB BIT TEST (TEST 15)/
6839	050774	044502	020124	042524	
6840	051002	052123	024040	042524	
6841	051010	052123	030440	024465	
6842	051016	000			
6843	051017	122	053510	020103	HED16: .ASCIZ/RHWC OPERATIONAL TEST (TEST 16)/
6844	051024	050117	051105	052101	
6845	051032	047511	040516	020114	
6846	051040	042524	052123	024040	
6847	051046	042524	052123	030440	
6848	051054	024466	000		
6849	051057	122	041110	020101	HED17: .ASCIZ/RHBA OPERATIONAL TEST (TEST 17)/
6850	051064	050117	051105	052101	
6851	051072	047511	040516	020114	
6852	051100	042524	052123	024040	
6853	051106	042524	052123	030440	
6854	051114	024467	000		
6855	051117	116	046505	052054	HED20: .ASCIZ/NEM,TRE AND SC BIT TEST (TEST 20)/
6856	051124	042522	040440	042116	
6857	051132	051440	020103	044502	
6858	051140	020124	042524	052123	
6859	051146	024040	042524	052123	
6860	051154	031040	024460	000	
6861	051161	127	042503	052054	HED21: .ASCIZ/WCE,TRE AND SC BIT TEST (TEST 21)/
6862	051166	042522	040440	042116	
6863	051174	051440	020103	044502	
6864	051202	020124	042524	052123	
6865	051210	024040	042524	052123	
6866	051216	031040	024461	000	
6867	051223	115	050104	026105	HED22: .ASCIZ/MOPE,TRE AND SC BIT TEST (TEST 22)/
6868	051230	051124	020105	047101	
6869	051236	020104	041523	041040	
6870	051244	052111	052040	051505	
6871	051252	020124	052050	051505	
6872	051260	020124	031062	000051	
6873	051266	050125	026105	051124	HED23: .ASCIZ/UPE,TRE AND SC BIT TEST (TEST 23) RH11 ONLY/
6874	051274	020105	047101	020104	
6875	051302	041523	041040	052111	
6876	051310	052040	051505	020124	
6877	051316	052050	051505	020124	
6878	051324	031462	020051	044122	
6879	051332	030461	047440	046116	
6880	051340	000131			
6881	051342	050125	026105	051124	HED24: .ASCIZ/UPE,TRE AND SC BIT TEST (TEST 24)/
6882	051350	020105	047101	020104	

N10

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 131

6883	051356	041523	041040	052111	
6884	051364	052040	051505	020124	
6885	051372	052050	051505	020124	
6886	051400	032062	000051		
6887	051404	042516	026104	051124	HED25: .ASCIZ/MED,TRE AND SC BIT TEST (TEST 25)/
6888	051412	020105	047101	020104	
6889	051420	041523	041040	052111	
6890	051426	052040	051505	020124	
6891	051434	052050	051505	020124	
6892	051442	032462	000051		
6893	051446	054115	026106	051124	HED26: .ASCIZ/MXF,TRE AND SC BIT TEST (TEST 26)/
6894	051454	020105	047101	020104	
6895	051462	041523	041040	052111	
6896	051470	052040	051505	020124	
6897	051476	052050	051505	020124	
6898	051504	033062	000051		
6899	051510	043520	020105	051124	HED27: .ASCIZ/PGE TRE AND SC BIT TEST (TEST 27)/
6900	051516	020105	047101	020104	
6901	051524	041523	041040	052111	
6902	051532	052040	051505	020124	
6903	051540	052050	051505	020124	
6904	051546	033462	000051		
6905	051552	054115	026106	051124	HED30: .ASCIZ/MXF,TRE AND SC BIT TEST (TEST 30)/
6906	051560	020105	047101	020104	
6907	051566	041523	041040	052111	
6908	051574	052040	051505	020124	
6909	051602	052050	051505	020124	
6910	051610	030063	000051		
6911	051614	041515	042520	040440	HED31: .ASCIZ/MCPE AND SC ERROR BIT TEST (TEST 31)/
6912	051622	042116	051440	020103	
6913	051630	051105	047522	020122	
6914	051636	044502	020124	042524	
6915	051644	052123	024040	042524	
6916	051652	052123	031440	024461	
6917	051660	000			
6918	051661	104	046102	052040	HED32: .ASCIZ/DBL TEST,1 WORD FROM A BASE 4 ADDRESS (TEST 32)/
6919	051666	051505	026124	020061	
6920	051674	047527	042122	043040	
6921	051702	047522	020115	020101	
6922	051710	040502	042523	032040	
6923	051716	040440	042104	042522	
6924	051724	051523	024040	042524	
6925	051732	052123	031440	024462	
6926	051740	000			
6927	051741	104	046102	052040	HED33: .ASCIZ/DBL TEST,2 WORD FROM A BASE 4 ADD. (TEST 33)/
6928	051746	051505	026124	020062	
6929	051754	047527	042122	043040	
6930	051762	047522	020115	020101	
6931	051770	040502	042523	032040	
6932	051776	040440	042104	020056	
6933	052004	052050	051505	020124	
6934	052012	031463	000051		
6935	052016	041104	020114	042524	HED34: .ASCIZ/DBL TEST,3 WORD FROM A BASE 4 ADD. (TEST 34)/
6936	052024	052123	031454	053440	
6937	052032	051117	020104	051106	
6938	052040	046517	040440	041040	

MESSAGE RATIO AND RATIO DIAGNOSTIC
 CTR-00.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 132

6939	052076	051501	020105	020064
6940	052054	042101	027104	024040
6941	052062	042524	052123	031440
6942	052070	024464	000	
6943	052073	104	046102	052040
6944	052100	051505	026124	020064
6945	052106	047527	042122	020123
6946	052114	051106	046517	040440
6947	052122	041040	051501	020105
6948	052130	020064	042101	027104
6949	052136	024040	042524	052123
6950	052144	031440	024465	000
6951	052151	104	046102	052040
6952	052156	051505	026124	020061
6953	052164	047527	042122	043040
6954	052172	047522	020115	020101
6955	052200	040502	042523	032040
6956	052206	040440	042104	024056
6957	052214	042524	052123	031440
6958	052222	024466	000	
6959	052225	104	046102	052040
6960	052232	051505	026124	020062
6961	052240	047527	042122	043040
6962	052246	047522	020115	020101
6963	052254	040502	042523	032040
6964	052262	040440	042104	020056
6965	052270	044527	044124	041040
6966	052276	044501	051440	052105
6967	052304	024040	042524	052123
6968	052312	031440	024467	000
6969	052317	104	046102	052040
6970	052324	051505	026124	020062
6971	052332	047527	042122	053440
6972	052340	052111	020110	040502
6973	052346	020111	042523	020124
6974	052354	047101	020104	051127
6975	052362	052111	020105	042522
6976	052370	020126	052051	051505
6977	052376	020124	030064	000051
6978	052404	041104	020114	042524
6979	052412	052123	047054	052117
6980	052420	040440	041040	051501
6981	052426	020105	020064	042101
6982	052434	020104	052050	051505
6983	052442	020124	030464	000051
6984	052450	041104	020114	042524
6985	052456	052123	041040	051501
6986	052464	020105	020064	042101
6987	052472	027104	053440	044522
6988	052500	042524	043040	042127
6989	052506	024040	042524	052123
6990	052514	032040	024462	000
6991	052521	104	046102	052040
6992	052526	051505	020124	031054
6993	052534	053440	051117	020104
6994	052542	047054	052117	040440

HED35: .ASCIZ/DBL TEST,4 WORDS FROM A BASE 4 ADD. (TEST 35)/

HED36: .ASCIZ/DBL TEST,1 WORD FROM A BASE 4 ADD.(TEST 36)/

HED37: .ASCIZ/DBL TEST,2 WORD FROM A BASE 4 ADD. WITH BAI SET (TEST 37)/

HED40: .ASCIZ/DBL TEST,2 WORD WITH BAI SET AND WRITE REV (TEST 40)/

HED41: .ASCIZ/DBL TEST,NOT A BASE 4 ADD (TEST 41)/

HED42: .ASCIZ/DBL TEST BASE 4 ADD. WRITE FWD (TEST 42)/

HED43: .ASCIZ/DBL TEST ,2 WORD ,NOT A BASE 4 ADD. (TEST 43)/

6995	052550	041040	051501	020105
6996	052556	020064	042101	027104
6997	052564	024040	042524	052123
6998	052572	032040	024463	000
6999	052577	104	046102	052040
7000	052604	051505	026124	020063
7001	052612	047527	042122	026040
7002	052620	047516	020124	020101
7003	052626	040502	042523	032040
7004	052634	040440	042104	026056
7005	052642	051127	052111	020105
7006	052650	042522	020126	052050
7007	052656	051505	020124	032064
7008	052664	000051		
7009	052666	041104	020114	042524
7010	052674	052123	031054	053440
7011	052702	051117	020104	042522
7012	052710	042101	043040	042127
7013	052716	024040	042524	052123
7014	052724	032040	024465	000
7015	052731	104	046102	052040
7016	052736	051505	026124	020062
7017	052744	047527	042122	051040
7018	052752	040505	020104	053506
7019	052760	026104	047516	020124
7020	052766	020101	040502	042523
7021	052774	032040	040440	042104
7022	053002	020056	052050	051505
7023	053010	020124	033064	000051
7024	053016	041104	020114	042524
7025	053024	052123	031054	053440
7026	053032	051117	020104	042522
7027	053040	042101	051040	053105
7028	053046	041054	051501	020105
7029	053054	020064	042101	027104
7030	053062	024040	042524	052123
7031	053070	032040	024467	000
7032	053075	104	046102	052040
7033	053102	051505	026124	020062
7034	053110	047527	042122	051040
7035	053116	040505	020104	042522
7036	053124	026126	047516	020124
7037	053132	020101	040502	042523
7038	053140	032040	040440	042104
7039	053146	020056	052050	051505
7040	053154	020124	030065	000051
7041	053162	041104	020114	042524
7042	053170	052123	031454	053440
7043	053176	051117	020104	042522
7044	053204	042101	043040	042127
7045	053212	041054	051501	020105
7046	053220	020064	042101	027104
7047	053226	024040	042524	052123
7048	053234	032440	024461	000
7049	053241	104	046102	052040
7050	053246	051505	026124	020063

HED44: .ASCIZ/DBL TEST,3 WORD ,NOT A BASE 4 ADD.,WRITE REV (TEST 44)/

HED45: .ASCIZ/DBL TEST,2 WORD READ FWD (TEST 45)/

HED46: .ASCIZ/DBL TEST,2 WORD READ FWD,NOT A BASE 4 ADD. (TEST 46)/

HED47: .ASCIZ/DBL TEST,2 WORD READ REV,BASE 4 ADD. (TEST 47)/

HED50: .ASCIZ/DBL TEST,2 WORD READ REV,NOT A BASE 4 ADD. (TEST 50)/

HED51: .ASCIZ/DBL TEST,3 WORD READ FWD,BASE 4 ADD. (TEST 51)/

HED52: .ASCIZ/DBL TEST,3 WORD READ REV,BASE 4 ADD. (TEST 52)/

D11

MASSBUS RHT0 AND RH11 DIAGNOSTIC
DZRHBC.F11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 134

7051	053254	047527	042122	051040
7052	053262	040505	020104	042522
7053	053270	026126	040502	042523
7054	053276	032040	040440	042104
7055	053304	020056	052050	051505
7056	053312	020124	031065	000051
7057	053320	041527	020105	053505
7058	053326	042440	051122	051117
7059	053334	052040	051505	020124
7060	053342	053442	042503	047514
7061	053350	020042	052050	051505
7062	053356	020124	031465	000051
7063	053364	041527	020105	053517
7064	053372	042440	051122	051117
7065	053400	052040	051505	020124
7066	053406	053442	042503	044510
7067	053414	020042	052050	051505
7068	053422	020124	032065	000051
7069	053430	047111	042524	052522
7070	053436	052120	042440	040516
7071	053444	046102	020105	042524
7072	053452	052123	024040	042524
7073	053460	052123	032440	024465
7074	053466	000		
7075	053467	122	040505	020104
7076	053474	050117	051105	052101
7077	053502	047511	040516	020114
7078	053510	042524	052123	024040
7079	053516	047516	046522	046101
7080	053524	021440	024461	024040
7081	053532	042524	052123	032440
7082	053540	024466	000	
7083	053543	122	020110	050117
7084	053550	051105	052101	047511
7085	053556	040516	020114	051127
7086	053564	052111	020105	042524
7087	053572	052123	021440	020061
7088	053600	052050	051505	020124
7089	053606	033465	000051	
7090	053612	042522	042101	047440
7091	053620	042520	040522	044524
7092	053626	047117	046101	052040
7093	053634	051505	020124	047050
7094	053642	051117	040515	020114
7095	053650	031043	024051	042524
7096	053656	052123	033040	024460
7097	053664	000		
7098	053665	122	020110	050117
7099	053672	051105	052101	047511
7100	053700	040516	020114	042522
7101	053706	042101	052040	051505
7102	053714	020124	030443	024040
7103	053722	042524	052123	033040
7104	053730	024461	000	
7105	053733	122	040505	020104
7106	053740	050117	051105	052101

HED53: .ASCIZ/WCE EW ERROR TEST "WCELO" (TEST 53)/

HED54: .ASCIZ/WCE OW ERROR TEST "WCEHI" (TEST 54)/

HED55: .ASCIZ/INTERUPT ENABLE TEST (TEST 55)/

HED56: .ASCIZ/READ OPERATIONAL TEST (NORMAL #1) (TEST 56)/

HED57: .ASCIZ/RH OPERATIONAL WRITE TEST #1 (TEST 57)/

HED60: .ASCIZ/READ OPERATIONAL TEST (NORMAL #2)(TEST 60)/

HED61: .ASCIZ/RH OPERATIONAL READ TEST #1 (TEST 61)/

HED62: .ASCIZ/READ OPERATIONAL TEST (NORMAL #3)(TEST 62)/

E11

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 135

7107	053746	047511	040516	020114
7108	053754	042524	052123	024040
7109	053762	047516	046522	046101
7110	053770	021440	024463	052050
7111	053776	051505	020124	031066
7112	054004	000051		
7113	054006	044122	047440	042520
7114	054014	040522	044524	047117
7115	054022	046101	053440	044522
7116	054030	042524	052040	051505
7117	054036	020124	031043	024040
7118	054044	042524	052123	033040
7119	054052	024463	000	
7120	054055	122	040505	020104
7121	054062	050117	051105	052101
7122	054070	047511	040516	020114
7123	054076	042524	052123	024040
7124	054104	047516	046522	046101
7125	054112	021440	024464	052050
7126	054120	051505	020124	032066
7127	054126	000051		
7128	054130	044122	047440	042520
7129	054136	040522	044524	047117
7130	054144	046101	051040	040505
7131	054152	020104	042524	052123
7132	054160	021440	020062	052050
7133	054166	051505	020124	032466
7134	054174	000051		
7135	054176	051127	052111	020105
7136	054204	050117	051105	052101
7137	054212	047511	040516	020114
7138	054220	042524	052123	024040
7139	054226	047516	046522	046101
7140	054234	021440	024461	052050
7141	054242	051505	020124	033066
7142	054250	000051		
7143	054252	044122	047440	042520
7144	054260	040522	044524	047117
7145	054266	046101	053440	044522
7146	054274	042524	052040	051505
7147	054302	020124	031443	024040
7148	054310	042524	052123	033040
7149	054316	024467	000	
7150	054321	127	044522	042524
7151	054326	047440	042520	040522
7152	054334	044524	047117	046101
7153	054342	052040	051505	020124
7154	054350	047050	051117	040515
7155	054356	020114	031443	024051
7156	054364	042524	052123	033440
7157	054372	024460	000	
7158	054375	122	020110	050117
7159	054402	051105	052101	047511
7160	054410	040516	020114	042522
7161	054416	042101	052040	051505
7162	054424	020124	031443	024040

HED63: .ASCIZ/RH OPERATIONAL WRITE TEST #2 (TEST 63)/

HED64: .ASCIZ/READ OPERATIONAL TEST (NORMAL #4)(TEST 64)/

HED65: .ASCIZ/RH OPERATIONAL READ TEST #2 (TEST 65)/

HED66: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #1)(TEST 66)/

HED67: .ASCIZ/RH OPERATIONAL WRITE TEST #3 (TEST 67)/

HED70: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #3)(TEST 70)/

HED71: .ASCIZ/RH OPERATIONAL READ TEST #3 (TEST 71)/

F11

MASSBUS RHTD AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 136

7163	054432	042524	052123	033440	
7164	054440	024461	000		
7165	054443	127	044522	042524	HED72: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #3)(TEST 72)/
7166	054450	047440	042520	040522	
7167	054456	044524	047117	046101	
7168	054464	052040	051505	020124	
7169	054472	047050	051117	040515	
7170	054500	020114	031443	024051	
7171	054506	042524	052123	033440	
7172	054514	024462	000		
7173	054517	122	020110	050117	HED73: .ASCIZ/RH OPERATIONAL WRITE TEST #4 (TEST 73)/
7174	054524	051105	052101	047511	
7175	054532	040516	020114	051127	
7176	054540	052111	020105	042524	
7177	054546	052123	021440	020064	
7178	054554	052050	051505	020124	
7179	054562	031467	000051		
7180	054566	051127	052111	020105	HED74: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #4)(TEST 74)/
7181	054574	050117	051105	052101	
7182	054602	047511	040516	020114	
7183	054610	042524	052123	024040	
7184	054616	047516	046522	046101	
7185	054624	021440	024464	052050	
7186	054632	051505	020124	032067	
7187	054640	000051			
7188	054642	044122	047440	042520	HED75: .ASCIZ/RH OPERATIONAL READ TEST #4 (TEST 75)/
7189	054650	040522	044524	047117	
7190	054656	046101	051040	040505	
7191	054664	020104	042524	052123	
7192	054672	021440	020064	052050	
7193	054700	051505	020124	032467	
7194	054706	000051			
7195	054710	040514	043522	020105	HED76: .ASCIZ/LARGE TRANSFER TEST 671 WORDS (TEST 76)/
7196	054716	051124	047101	043123	
7197	054724	051105	052040	051505	
7198	054732	020124	033466	020061	
7199	054740	047527	042122	020123	
7200	054746	052050	051505	020124	
7201	054754	033067	000051		

G11

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 137

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7202
7203
7204
7205
7206
7207
7208 054760 047503 051122 041505
7209 054766 020124 044502 020124
7210 054774 044504 020104 047516
7211 055002 020124 042523 020124
7212 055010 047111 051040 053510
7213 055016 000103
7214 055020 047503 051122 041505
7215 055026 020124 044502 020124
7216 055034 044504 020104 047516
7217 055042 020124 042523 020124
7218 055050 047111 051040 041110
7219 055056 000101
7220 055060 047503 051122 041505
7221 055066 020124 044502 020124
7222 055074 044504 020104 047516
7223 055102 020124 042523 020124
7224 055110 047111 041040 051525
7225 055116 040440 042104 042522
7226 055124 051523 051040 043505
7227 055132 000056
7228 055134 047503 051122 041505
7229 055142 020124 044502 020124
7230 055150 044504 020104 047516
7231 055156 020124 042523 020124
7232 055164 047111 051040 042110
7233 055172 000102
7234 055174 047516 026516 054105
7235 055202 051511 040524 052116
7236 055210 046440 046505 051117
7237 055216 020131 044504 020104
7238 055224 047516 020124 042523
7239 055232 020124 047111 051040
7240 055240 041510 031123 000
7241 055245 040 047514 044507
7242 055252 020103 047524 051440
7243 055260 052105 052040 042522
7244 055266 041040 052111 044440
7245 055274 020116 044122 051503
7246 055302 020061 042522 044507
7247 055310 052123 051105 005015
7248 055316 051511 047040 052117
7249 055324 053440 051117 044513
7250 055332 043516 043454 020117
7251 055340 047524 024040 051503
7252 055346 041122 020051 051120
7253 055354 047111 051524 044440
7254 055362 020106 044122 030461
7255 055370 005015
7256 055372 051117 024040 051503
7257 055400 041124 020051 051120

```

;*****
 ;ERROR MESSAGES
 ;*****

.EVEN
 EM1: .ASCIZ/CORRECT BIT DID NOT SET IN RHWC/

EM2: .ASCIZ/CORRECT BIT DID NOT SET IN RHBA/

EM3: .ASCIZ/CORRECT BIT DID NOT SET IN BUS ADDRESS REG./

EM4: .ASCIZ/CORRECT BIT DID NOT SET IN RHDB/

EM5: .ASCIZ/NON-EXISTANT MEMORY DID NOT SET IN RHCS2/

EM6: .ASCII/ LOGIC TO SET TRE BIT IN RHCS1 REGISTER/<15><12>

.ASCII/IS NOT WORKING,GO TO (CSRB) PRINTS IF RH11/<15><12>

.ASCIZ/OR (CSTB) PRINTS IF RH70 IN LOCATION B7 ON BOTH PRINTS/

H11

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 138

7258	055406	047111	051524	044440
7259	055414	020106	044122	030067
7260	055422	044440	020116	047514
7261	055430	040503	044524	047117
7262	055436	041040	020067	047117
7263	055444	041040	052117	020110
7264	055452	051120	047111	051524
7265	055460	000		
7266	055461	116	046505	041040
7267	055466	052111	042040	042517
7268	055474	020123	047516	020124
7269	055502	042522	042101	040440
7270	055510	020123	042523	020124
7271	055516	047111	051040	041510
7272	055524	031123	000	
7273	055527	116	046505	040440
7274	055534	042116	051440	020103
7275	055542	047516	020124	042523
7276	055550	020124	047111	051040
7277	055556	041510	030523	000
7278	055563	123	020103	044502
7279	055570	020124	042523	020124
7280	055576	054502	040440	052124
7281	055604	020116	051117	046440
7282	055612	050103	020105	051105
7283	055620	047522	000122	
7284	055624	051440	020103	044504
7285	055632	020104	047516	020124
7286	055640	042523	000124	
7287	055644	051124	020105	044502
7288	055652	020124	051511	051440
7289	055660	052105	041040	052125
7290	055666	051440	020103	042522
7291	055674	042101	020123	051501
7292	055702	041440	042514	051101
7293	055710	042105	000	
7294	055713	127	042503	041040
7295	055720	052111	042040	042111
7296	055726	047040	052117	051440
7297	055734	052105	000	
7298	055737	127	042503	041040
7299	055744	052111	042040	042111
7300	055752	047040	052117	051440
7301	055760	052105	000	
7302	055763	124	042522	041040
7303	055770	052111	047040	052117
7304	055776	051440	052105	000
7305	056003	127	042503	040440
7306	056010	042116	052040	042522
7307	056016	040440	042522	051440
7308	056024	052105	041040	052125
7309	056032	051440	020103	044502
7310	056040	020124	047516	020124
7311	056046	042523	000124	
7312	056052	050125	020105	044504
7313	056060	020104	047516	020124

EM7: .ASCIZ/NEM BIT DOES NOT READ AS SET IN RHCS2/

EM10: .ASCIZ/NEM AND SC NOT SET IN RHCS1/

EM11: .ASCIZ/SC BIT SET BY ATTN OR MCPE ERROR/

EM12: .ASCIZ/ SC DID NOT SET/

EM13: .ASCIZ/TRE BIT IS SET BUT SC READS AS CLEARED/

EM14: .ASCIZ/WCE BIT DID NOT SET/

EM15: .ASCIZ/WCE BIT DID NOT SET/

EM16: .ASCIZ/TRE BIT NOT SET/

EM17: .ASCIZ/WCE AND TRE ARE SET BUT SC BIT NOT SET/

EM20: .ASCIZ/UPE DID NOT SET IN RHCS2/

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 139

7314	056066	042523	020124	047111	
7315	056074	051040	041510	031123	
7316	056102	000			
7317	056103	124	042522	040440	EM21: .ASCII/TRE AND SC BITS ARE SET/
7318	056110	042116	051440	020103	
7319	056116	044502	051524	040440	
7320	056124	042522	051440	052105	
7321	056132	050125	020105	047101	EM22: .ASCIZ/UPE AND SC BIT DID NOT SET/
7322	056140	020104	041523	041040	
7323	056146	052111	042040	042111	
7324	056154	047040	052117	051440	
7325	056162	052105	000		
7326	056165	123	020103	044502	EM23: .ASCIZ/SC BIT NOT SET/
7327	056172	020124	047516	020124	
7328	056200	042523	000124		
7329	056204	042516	020104	044504	EM24: .ASCIZ/NED DID NOT SET IN RHCS2/
7330	056212	020104	047516	020124	
7331	056220	042523	020124	047111	
7332	056226	051040	041510	031123	
7333	056234	000			
7334	056235	124	042522	040440	EM25: .ASCIZ/TRE AND SC SHOULD NOT SET/
7335	056242	042116	051440	020103	
7336	056250	044123	052517	042114	
7337	056256	047040	052117	051440	
7338	056264	052105	000		
7339	056267	124	042522	051440	EM26: .ASCIZ/TRE SHOULD NOT BE SET/
7340	056274	047510	046125	020104	
7341	056302	047516	020124	042502	
7342	056310	051440	052105	000	
7343	056315	124	042522	041040	EM27: .ASCIZ/TRE BIT WAS NOT SET BY NED/
7344	056322	052111	053440	051501	
7345	056330	047040	052117	051440	
7346	056336	052105	041040	020131	
7347	056344	042516	000104		
7348	056350	054115	020106	044502	EM30: .ASCIZ/MXF BIT DID NOT SET IN RHCS2/
7349	056356	020124	044504	020104	
7350	056364	047516	020124	042523	
7351	056372	020124	047111	051040	
7352	056400	041510	031123	000	
7353	056405	115	043130	041040	EM31: .ASCIZ/MXF BIT SHOULD BE SET IN RHCS2/
7354	056412	052111	051440	047510	
7355	056420	046125	020104	042502	
7356	056426	051440	052105	044440	
7357	056434	020116	044122	051503	
7358	056442	000062			
7359	056444	054115	020106	047101	EM32: .ASCIZ/MXF AND SC ARE NOT SET/
7360	056452	020104	041523	040440	
7361	056460	042522	047040	052117	
7362	056466	051440	052105	000	
7363	056473	124	042522	051040	EM33: .ASCIZ/TRE READS AS CLEARED,MXF AND SC ARE SET/
7364	056500	040505	051504	040440	
7365	056506	020123	046103	040505	
7366	056514	042522	026104	054115	
7367	056522	020106	047101	020104	
7368	056530	041523	040440	042522	
7369	056536	051440	052105	000	

J11

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 140

7370	056543	124	051505	042524
7371	056550	020122	047504	051505
7372	056556	047040	052117	051040
7373	056564	040505	020104	051501
7374	056572	041040	044505	043516
7375	056600	041440	047117	042516
7376	056606	052103	042105	000
7377	056613	102	052111	044440
7378	056620	020116	044122	051503
7379	056626	020063	044527	046114
7380	056634	047040	052117	051440
7381	056642	052105	000	
7382	056645	122	020110	044504
7383	056652	020104	047516	020124
7384	056660	042522	050123	047117
7385	056666	020104	047524	040440
7386	056674	042104	042522	051523
7387	056702	000		
7388	056703	104	052114	042040
7389	056710	042111	047040	052117
7390	056716	051440	052105	044440
7391	056724	020116	044122	051503
7392	056732	000062		
7393	056734	046104	020124	051511
7394	056742	047040	052117	051440
7395	056750	052105	044440	020116
7396	056756	044122	051503	026062
7397	056764	052502	020124	051124
7398	056772	020105	047101	020104
7399	057000	041523	040440	042522
7400	057006	051440	052105	005015
7401	057014	051124	020105	047101
7402	057022	020104	041523	041440
7403	057030	052517	042114	044040
7404	057036	053101	020105	042502
7405	057044	047105	051440	052105
7406	057052	041040	020131	047101
7407	057060	052117	042510	020122
7408	057066	051105	047522	000122
7409	057074	052517	050124	052125
7410	057102	051040	040505	054504
7411	057110	042040	042111	047040
7412	057116	052117	051440	052105
7413	057124	053440	042510	020116
7414	057132	047111	047506	053440
7415	057140	051501	046040	040517
7416	057146	042504	020104	047111
7417	057154	047524	052040	042510
7418	057162	042040	052101	020101
7419	057170	052502	043106	051105
7420	057176	000		
7421	057177	101	046114	041040
7422	057204	052111	020123	044504
7423	057212	020104	047516	020124
7424	057220	047514	042101	044440
7425	057226	052116	020117	044122

EM34: .ASCIZ/TESTER DOES NOT READ AS BEING CONNECTED/

EM35: .ASCIZ/BIT IN RHCS3 WILL NOT SET/

EM36: .ASCIZ/RH DID NOT RESPOND TO ADDRESS/

EM37: .ASCIZ/DLT DID NOT SET IN RHCS2/

EM40: .ASCII/DLT IS NOT SET IN RHCS2,BUT TRE AND SC ARE SET/⟨15⟩⟨12⟩

.ASCIZ/TRE AND SC COULD HAVE BEEN SET BY ANOTHER ERROR/

EM41: .ASCIZ/OUTPUT READY DID NOT SET WHEN INFO WAS LOADED INTO THE DATA BUFFER/

EM42: .ASCIZ/ALL BITS DID NOT LOAD INTO RHWC (177777)/

K11

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 141

7426	057234	041527	024040	033461	
7427	057242	033467	033467	000051	
7428	057250	044122	041527	042040	EM43: .ASCIZ/RHWC DID NOT LOAD ANY BITS (177777)/
7429	057256	042111	047040	052117	
7430	057264	046040	040517	020104	
7431	057272	047101	020131	044502	
7432	057300	051524	024040	033461	
7433	057306	033467	033467	000051	
7434	057314	047523	042515	041040	EM44: .ASCIZ/SOME BITS CLEARED IN RHWC AFTER CLR WAS LOADED INTO RHCS2/
7435	057322	052111	020123	046103	
7436	057330	040505	042522	020104	
7437	057336	047111	051040	053510	
7438	057344	020103	043101	042524	
7439	057352	020122	046103	020122	
7440	057360	040527	020123	047514	
7441	057366	042101	042105	044440	
7442	057374	052116	020117	044122	
7443	057402	051503	000062		
7444	057406	047516	026516	054105	EM45: .ASCIZ/NON-EXISTANT MEMORY BIT SET IN RHCS2 (NEM)/
7445	057414	051511	040524	052116	
7446	057422	046440	046505	051117	
7447	057430	020131	044502	020124	
7448	057436	042523	020124	047111	
7449	057444	051040	041510	031123	
7450	057452	024040	042516	024515	
7451	057460	000			
7452	057461	122	041110	020101	EM46: .ASCIZ/RHBA DID NOT CLR AFTER CLR WAS LOADED INTO RHCS2/
7453	057466	044504	020104	047516	
7454	057474	020124	046103	020122	
7455	057502	043101	042524	020122	
7456	057510	046103	020122	040527	
7457	057516	020123	047514	042101	
7458	057524	042105	044440	052116	
7459	057532	020117	044122	051503	
7460	057540	000062			
7461	057542	046101	020114	044502	EM47: .ASCIZ/ALL BITS DID NOT LOAD INTO RHBA (177776)/
7462	057550	051524	042040	042111	
7463	057556	047040	052117	046040	
7464	057564	040517	020104	047111	
7465	057572	047524	051040	041110	
7466	057600	020101	030450	033467	
7467	057606	033467	024466	000	
7468	057613	114	040517	044504	EM50: .ASCIZ/LOADING TRE AFTER ITS SET DOES NOT CLEAR ERROR/
7469	057620	043516	052040	042522	
7470	057626	040440	052106	051105	
7471	057634	044440	051524	051440	
7472	057642	052105	042040	042517	
7473	057650	020123	047516	020124	
7474	057656	046103	040505	020122	
7475	057664	051105	047522	000122	
7476	057672	043520	020105	044504	EM51: .ASCIZ/PGE DID NOT SET IN RHCS2/
7477	057700	020104	047516	020124	
7478	057706	042523	020124	047111	
7479	057714	051040	041510	031123	
7480	057722	000			
7481	057723	124	042510	050040	EM52: .ASCII/THE PROM WHILE ACCESSING A REGISTER/<15><12>

L11

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.F11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 142

7482	057730	047522	020115	044127
7483	057736	046111	020105	041501
7484	057744	042503	051523	047111
7485	057752	020107	020101	042522
7486	057760	044507	052123	051105
7487	057766	005015		
7488	057770	044127	041511	020110
7489	057776	047531	051125	052040
7490	060004	051505	042524	020122
7491	060012	040503	047116	052117
7492	060020	051440	050125	046120
7493	060026	020131	047111	047506
7494	060034	046522	052101	047511
7495	060042	006516	012	
7496	060045	106	051117	051440
7497	060052	054501	020123	047111
7498	060060	047506	044440	020123
7499	060066	051120	051505	047105
7500	060074	000124		
7501	060076	044122	051503	000061
7502	060104	044122	041527	000
7503	060111	122	041110	000101
7504	060116	044122	051115	000062
7505	060124	044122	051503	000062
7506	060132	044122	052123	000
7507	060137	122	042510	000122
7508	060144	044122	051501	000
7509	060151	122	052110	041104
7510	060156	000		
7511	060157	122	042110	000123
7512	060164	044122	051115	000061
7513	060172	044122	052104	000
7514	060177	122	041110	042501
7515	060204	000		
7516	060205	122	041510	031523
7517	060212	000		
7518	060213	104	053105	041511
7519	060220	020105	052516	041115
7520	060226	051105	044440	020116
7521	060234	044122	051115	020062
7522	060242	047504	051505	047040
7523	060250	052117	042440	052521
7524	060256	046101	040440	033440
7525	060264	043101	042524	020122
7526	060272	020101	046103	040505
7527	060300	000122		
7528	060302	044122	051503	020061
7529	060310	040510	020123	047101
7530	060316	042440	051122	051117
7531	060324	041040	052111	051440
7532	060332	052105	005015	000
7533	060337	105	051122	051117
7534	060344	041040	052111	051440
7535	060352	052105	044440	020116
7536	060360	044122	051503	000062
7537	060366	051105	047522	020122

.ASCII/WHICH YOUR TESTER CANNOT SUPPLY INFORMATION/<15><12>

.ASCIZ/FOR SAYS INFO IS PRESENT/

EM53:	.ASCIZ/RHCS1/
EM54:	.ASCIZ/RHWC/
EM55:	.ASCIZ/RHBA/
EM56:	.ASCIZ/RHMR2/
EM57:	.ASCIZ/RHCS2/
EM60:	.ASCIZ/RHST/
EM61:	.ASCIZ/RHER/
EM62:	.ASCIZ/RHAS/
EM63:	.ASCIZ/RHTDB/

EM64:	.ASCIZ/RHDS/
EM65:	.ASCIZ/RHMR1/
EM66:	.ASCIZ/RHDT/
EM67:	.ASCIZ/RHBAE/

EM70: .ASCIZ/RHCS3/

EM71: .ASCIZ/DEVICE NUMBER IN RHMR2 DOES NOT EQUAL A 7AFTER A CLEAR/

EM72: .ASCIZ/RHCS1 HAS AN ERROR BIT SET/<15><12>

EM73: .ASCIZ/ERROR BIT SET IN RHCS2/

EM74: .ASCIZ/ERROR BIT SET IN RHER/

M11

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 143

7538	060374	044502	020124	042523	
7539	060402	020124	047111	051040	
7540	060410	042510	000122		
7541	060414	051105	047522	020122	EM75: .ASCIZ/ERROR BIT SET IN RHST/⟨15⟩⟨12⟩
7542	060422	044502	020124	042523	
7543	060430	020124	047111	051040	
7544	060436	051510	006524	000012	
7545	060444	044122	040502	044440	EM76: .ASCIZ/RHBA INCREMENTED BUT IT DID NOT CARRY OVER TO RHBAE, RHBAE SHOULD =40/
7546	060452	041516	042522	042515	
7547	060460	052116	042105	041040	
7548	060466	052125	044440	020124	
7549	060474	044504	020104	047516	
7550	060502	020124	040503	051122	
7551	060510	020131	053117	051105	
7552	060516	052040	020117	044122	
7553	060524	040502	026105	044122	
7554	060532	040502	020105	044123	
7555	060540	052517	042114	036440	
7556	060546	030064	000		
7557	060551	122	054504	042040	EM77: .ASCII/RDY DID NOT SET, AND WORD COUNT DID NOT INCREMENT/⟨15⟩⟨12⟩
7558	060556	042111	047040	052117	
7559	060564	051440	052105	040454	
7560	060572	042116	053440	051117	
7561	060600	020104	047503	047125	
7562	060606	020124	044504	020104	
7563	060614	047516	020124	047111	
7564	060622	051103	046505	047105	
7565	060630	006524	012		
7566	060633	104	044517	043516	.ASCIZ/DOING A WRITE OPERATION/
7567	060640	040440	053440	044522	
7568	060646	042524	047440	042520	
7569	060654	040522	044524	047117	
7570	060662	000			
7571	060663	122	041110	042501	EM100: .ASCII/RHBAE DID NOT CLEAR AFTER CLR WAS LOADED/⟨15⟩⟨12⟩
7572	060670	042040	042111	047040	
7573	060676	052117	041440	042514	
7574	060704	051101	040440	052106	
7575	060712	051105	041440	051114	
7576	060720	053440	051501	046040	
7577	060726	040517	042504	006504	
7578	060734	012			
7579	060735	111	052116	020117	.ASCIZ/INTO RHCS2/
7580	060742	044122	051503	000062	
7581	060750	051127	052111	020105	EM101: .ASCIZ/WRITE REVERSE OPERATION DID NOT WORK/
7582	060756	042522	042526	051522	
7583	060764	020105	050117	051105	
7584	060772	052101	047511	020116	
7585	061000	044504	020104	047516	
7586	061006	020124	047527	045522	
7587	061014	000			
7588					
7589	061015	122	054504	042040	EM102: .ASCIZ/RDY DID NOT SET IN RHCS1/
7590	061022	042111	047040	052117	
7591	061030	051440	052105	044440	
7592	061036	020116	044122	051503	
7593	061044	000061			

N11

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 144

7594	061046	052504	044522	043516
7595	061054	040440	053440	044522
7596	061062	042524	047440	042520
7597	061070	040522	044524	047117
7598	061076	051040	054504	042040
7599	061104	042111	047040	052117
7600	061112	051440	052105	005015
7601	061120	047527	042122	041440
7602	061126	052517	052116	042040
7603	061134	042111	047040	052117
7604	061142	044440	041516	042522
7605	061150	042515	052116	041054
7606	061156	052125	044440	043116
7607	061164	051117	040515	044524
7608	061172	047117	005015	
7609	061176	040527	020123	051127
7610	061204	052111	042524	020116
7611	061212	047524	052040	051505
7612	061220	042524	000122	
7613	061224	052504	044522	043516
7614	061232	040440	053440	044522
7615	061240	042524	047440	042520
7616	061246	040522	044524	047117
7617	061254	051040	054504	042040
7618	061262	042111	047040	052117
7619	061270	051440	052105	005015
7620	061276	047527	042122	041440
7621	061304	052517	052116	042040
7622	061312	042111	047040	052117
7623	061320	044440	041516	042522
7624	061326	042515	052116	040454
7625	061334	042116	044440	043116
7626	061342	051117	040515	044524
7627	061350	047117	005015	
7628	061354	040527	020123	047516
7629	061362	020124	051124	047101
7630	061370	043123	051105	042105
7631	061376	052040	020117	044124
7632	061404	020105	042524	052123
7633	061412	051105	000	
7634	061415	102	042501	044440
7635	061422	020123	042515	051523
7636	061430	042105	052440	026120
7637	061436	052111	051440	047510
7638	061444	046125	020104	050505
7639	061452	040525	020114	030064
7640	061460	000054		
7641	061462	040502	020105	044504
7642	061470	020104	047516	020124
7643	061476	047111	051103	046505
7644	061504	047105	000124	
7645	061510	042522	042101	051040
7646	061516	053105	047440	042520
7647	061524	040522	044524	047117
7648	061532	042040	042111	047040
7649	061540	052117	051040	040505

EM103: .ASCII/DURING A WRITE OPERATION RDY DID NOT SET/<15><12>

.ASCII/WORD COUNT DID NOT INCREMENT,BUT INFORMATION/<15><12>

.ASCIZ/WAS WRITTEN TO TESTER/

EM104: .ASCII/DURING A WRITE OPERATION RDY DID NOT SET/<15><12>

.ASCII/WORD COUNT DID NOT INCREMENT,AND INFORMATION/<15><12>

.ASCIZ/WAS NOT TRANSFERED TO THE TESTER/

EM105: .ASCIZ/BAE IS MESSED UP,IT SHOULD EQUAL 40,/

EM106: .ASCIZ/BAE DID NOT INCREMENT/

EM107: .ASCIZ/READ REV OPERATION DID NOT READ FROM TESTER TO STORAGE LOCATION (RBUF)/

7650	06:1546	020104	051106	046517
7651	06:1554	052040	051505	042524
7652	06:1562	020122	047524	051440
7653	06:1570	047524	040522	042507
7654	06:1576	046040	041517	052101
7655	06:1604	047511	020116	051050
7656	06:1612	052502	024506	000
7657	06:1617	122	041110	042501
7658	06:1624	042440	052521	046101
7659	06:1632	020123	026060	052111
7660	06:1640	051440	047510	046125
7661	06:1646	020104	050505	040525
7662	06:1654	020114	030064	005015
7663	06:1662	043101	042524	020122
7664	06:1670	020101	047117	020105
7665	06:1676	047527	042122	053440
7666	06:1704	044522	042524	000
7667	06:1711	101	033461	042040
7668	06:1716	042111	047040	052117
7669	06:1724	051440	052105	040440
7670	06:1732	052106	051105	041040
7671	06:1740	020101	040527	020123
7672	06:1746	047111	051103	046505
7673	06:1754	047105	042524	006504
7674	06:1762	000012		
7675	06:1764	040502	042040	042111
7676	06:1772	047040	052117	044440
7677	06:2000	041516	042522	042515
7678	06:2006	052116	000	
7679	06:2011	102	020101	047111
7680	06:2016	051103	046505	047105
7681	06:2024	042524	020104	052502
7682	06:2032	020124	052111	042040
7683	06:2040	042111	047040	052117
7684	06:2046	041440	051101	054522
7685	06:2054	052040	006517	012
7686	06:2061	101	033061	040440
7687	06:2066	042116	040440	033461
7688	06:2074	044440	020116	044122
7689	06:2102	051503	000061	
7690	06:2106	052517	050124	052125
7691	06:2114	051040	040505	054504
7692	06:2122	053440	051501	047040
7693	06:2130	052117	047040	043505
7694	06:2136	052101	042105	040440
7695	06:2144	052106	051105	041440
7696	06:2152	051114	053440	051501
7697	06:2160	005015		
7698	06:2162	047514	042101	042105
7699	06:2170	044440	052116	020117
7700	06:2176	044122	051503	000062
7701	06:2204	046101	020114	044502
7702	06:2212	051524	042040	042111
7703	06:2220	047040	052117	051040
7704	06:2226	040505	020104	047524
7705	06:2234	051440	047524	040522

EM110: .ASCII/RHBAE EQUALS 0, IT SHOULD EQUAL 40/(15)<(12)

.ASCIZ/AFTER A ONE WORD WRITE/

EM111: .ASCIZ/A17 DID NOT SET AFTER BA WAS INCREMENTED/(15)<(12)

EM112: .ASCIZ/BA DID NOT INCREMENT/

EM113: .ASCII/BA INCREMENTED BUT IT DID NOT CARRY TO/(15)<(12)

.ASCIZ/A16 AND A17 IN RHCS1/

EM114: .ASCII/OUTPUT READY WAS NOT NEGATED AFTER CLR WAS/(15)<(12)

.ASCIZ/LOADED INTO RHCS2/

EM115: .ASCIZ/ALL BITS DID NOT READ TO STORAGE LOC. (RBUF) DURING A READ REV. OPERATION

7706	062242	042507	046040	041517
7707	062250	020056	051050	052502
7708	062256	024506	042040	051125
7709	062264	047111	020107	020101
7710	062272	042522	042101	051040
7711	062300	053105	020056	050117
7712	062306	051105	052101	047511
7713	062314	000116		
7714	062316	042115	042520	042040
7715	062324	042111	047040	052117
7716	062332	051440	052105	044440
7717	062340	020116	044122	051503
7718	062346	000062		
7719	062350	047111	047506	042040
7720	062356	042111	047040	052117
7721	062364	053440	044522	042524
7722	062372	052040	020117	042524
7723	062400	052123	051105	042040
7724	062406	044517	043516	040440
7725	062414	005015		
7726	062416	051127	052111	020105
7727	062424	042522	042526	051522
7728	062432	020105	050117	051105
7729	062440	052101	047511	000116
7730	062446	051124	020105	047101
7731	062454	020104	041523	053440
7732	062462	042510	042522	047040
7733	062470	052117	051440	052105
7734	062476	041040	020131	042115
7735	062504	042520	000	
7736	062507	124	042522	044440
7737	062514	020123	042523	020124
7738	062522	047111	051040	041510
7739	062530	030523	046454	050104
7740	062536	020105	047101	020104
7741	062544	041523	000	
7742	062547	123	047510	046125
7743	062554	020104	046101	047523
7744	062562	041040	020105	042523
7745	062570	000124		
7746	062572	042115	042520	040440
7747	062600	042116	051440	020103
7748	062606	044123	052517	042114
7749	062614	041040	020105	042523
7750	062622	000124		
7751	062624	051124	020105	047101
7752	062632	020104	041523	040440
7753	062640	042522	051440	052105
7754	062646	020054	043520	020105
7755	062654	044123	052517	042114
7756	062662	040440	051514	020117
7757	062670	042502	051440	052105
7758	062676	000		
7759	062677	104	046102	042040
7760	062704	042111	047040	052117
7761	062712	051440	052105	040440

EM116: .ASCIZ/MOPE DID NOT SET IN RHCS2/

EM117: .ASCII/INFO DID NOT WRITE TO TESTER DOING A/(15)<12>

.ASCIZ/WRITE REVERSE OPERATION/

EM120: .ASCIZ/TRE AND SC WHERE NOT SET BY MOPE/

EM121: .ASCIZ/TRE IS SET IN RHCS1,MOPE AND SC/

.ASCIZ/SHOULD ALSO BE SET/

EM122: .ASCIZ/MOPE AND SC SHOULD BE SET/

EM123: .ASCIZ/TRE AND SC ARE SET, PGE SHOULD ALSO BE SET/

EM124: .ASCII/DBL DID NOT SET AFTER A 4 WORD WRITE FROM/(15)<12>

7762	062720	052106	051105	040440
7763	062726	032040	053440	051117
7764	062734	020104	051127	052111
7765	062742	020105	051106	046517
7766	062750	005015		
7767	062752	047101	042440	042526
7768	062760	020116	042101	051104
7769	062766	051505	000123	
7770	062772	041104	020114	042523
7771	063000	020124	047111	051040
7772	063006	041510	031523	042040
7773	063014	044517	043516	040440
7774	063022	030440	053440	051117
7775	063030	020104	051127	052111
7776	063036	020105	051106	046517
7777	063044	005015		
7778	063046	047101	042440	042526
7779	063054	020116	042101	051104
7780	063062	051505	000123	
7781	063066	041104	020114	042523
7782	063074	020124	047111	051040
7783	063102	041510	031523	047440
7784	063110	020116	020101	020063
7785	063116	047527	042122	053440
7786	063124	044522	042524	043040
7787	063132	047522	006515	012
7788	063137	101	020116	053105
7789	063144	047105	040440	042104
7790	063152	042522	051523	000
7791	063157	104	046102	042040
7792	063164	042111	047040	052117
7793	063172	051440	052105	044440
7794	063200	020116	044122	051503
7795	063206	020063	043101	042524
7796	063214	020122	020101	020062
7797	063222	047527	042122	005015
7798	063230	051106	046517	040440
7799	063236	020116	053105	047105
7800	063244	040440	042104	042522
7801	063252	051523	000	
7802	063255	115	050103	020105
7803	063262	042523	020124	047111
7804	063270	051040	041510	030523
7805	063276	041040	052125	051440
7806	063304	020103	042522	042101
7807	063312	020123	051501	041440
7808	063320	042514	051101	042105
7809	063326	000		
7810	063327	115	050103	020105
7811	063334	044504	020104	047516
7812	063342	020124	042523	020124
7813	063350	047111	051040	041510
7814	063356	030523	000	
7815	063361	127	042503	046040
7816	063366	020117	047111	051040
7817	063374	041510	031523	042040

.ASCIZ/AN EVEN ADDRESS/

EM125: .ASCII/DBL SET IN RHCS3 DOING A 1 WORD WRITE FROM/1512/

.ASCIZ/AN EVEN ADDRESS/

EM126: .ASCII/DBL SET IN RHCS3 ON A 3 WORD WRITE FROM/1512/

.ASCIZ/AN EVEN ADDRESS/

EM127: .ASCII/DBL DID NOT SET IN RHCS3 AFTER A 2 WORD/1512/

.ASCIZ/FROM AN EVEN ADDRESS/

EM130: .ASCIZ/MCPE SET IN RHCS1 BUT SC READS AS CLEARED/

EM131: .ASCIZ/MCPE DID NOT SET IN RHCS1/

EM132: .ASCIZ/WCE LO IN RHCS3 DID NOT SET/

E12

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 148

7818	063402	042111	047040	052117
7819	063410	051440	052105	000
7820	063415	127	042503	046040
7821	063422	020117	044123	052517
7822	063430	042114	047440	046116
7823	063436	020131	042502	051440
7824	063444	052105	044440	020116
7825	063452	044122	051503	020063
7826	063460	052502	006524	012
7827	063465	127	042503	044040
7828	063472	020111	046101	047523
7829	063500	051040	040505	051504
7830	063506	040440	020123	042523
7831	063514	000124		
7832	063516	041527	020105	047514
7833	063524	051440	052105	044440
7834	063532	020116	044122	051503
7835	063540	020063	052502	020124
7836	063546	041527	020105	044504
7837	063554	020104	047516	020124
7838	063562	042523	020124	047111
7839	063570	051040	041510	031123
7840	063576	000		
7841	063577	127	042503	044040
7842	063604	020111	044504	020104
7843	063612	047516	020124	042523
7844	063620	020124	047111	051040
7845	063626	041510	031523	000
7846	063633	127	042503	044040
7847	063640	020111	042523	020124
7848	063646	047111	051040	041510
7849	063654	031523	041040	052125
7850	063662	053440	042503	042040
7851	063670	042111	047040	052117
7852	063676	051440	052105	044440
7853	063704	020116	044122	051503
7854	063712	000062		
7855	063714	041527	020105	044510
7856	063722	051440	047510	046125
7857	063730	020104	047117	054514
7858	063736	041040	020105	042523
7859	063744	020124	047111	051040
7860	063752	041510	031523	041040
7861	063760	052125	005015	
7862	063764	041527	020105	047514
7863	063772	040440	051514	020117
7864	064000	042522	042101	020123
7865	064006	051501	051440	052105
7866	064014	000		
7867	064015	127	044522	042524
7868	064022	047440	042520	040522
7869	064030	044524	047117	042040
7870	064036	042111	047040	052117
7871	064044	044440	041516	042522
7872	064052	042515	052116	053440
7873	064060	051117	020104	047503

EM133: .ASCII/WCE LO SHOULD ONLY BE SET IN RHCS3 BUT/⟨15⟩⟨12⟩

.ASCIZ/WCE HI ALSO READS AS SET/

EM134: .ASCIZ/WCE LO SET IN RHCS3 BUT WCE DID NOT SET IN RHCS2/

EM135: .ASCIZ/WCE HI DID NOT SET IN RHCS3/

EM136: .ASCIZ/WCE HI SET IN RHCS3 BUT WCE DID NOT SET IN RHCS2/

EM137: .ASCII/WCE HI SHOULD ONLY BE SET IN RHCS3 BUT/⟨15⟩⟨12⟩

.ASCIZ/WCE LO ALSO READS AS SET/

EM140: .ASCIZ/WRITE OPERATION DID NOT INCREMENT WORD COUNT/

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 149

7874	064066	047125	000124	
7875	064072	052502	020123	042101
7876	064100	051104	051505	020123
7877	064106	044504	020104	047516
7878	064114	020124	047111	051103
7879	064122	046505	047105	020124
7880	064130	043101	042524	020122
7881	064136	020101	051127	052111
7882	064144	000105		
7883	064146	047111	047506	046522
7884	064154	052101	047511	020116
7885	064162	044504	020104	047516
7886	064170	020124	042507	020124
7887	064176	051127	052111	042524
7888	064204	020116	047524	052040
7889	064212	051505	042524	000122
7890	064220	042522	042101	047440
7891	064226	042520	040522	044524
7892	064234	047117	042040	042111
7893	064242	047040	052117	044440
7894	064250	041516	042522	042515
7895	064256	052116	053440	051117
7896	064264	020104	047503	047125
7897	064272	000124		
7898	064274	052502	020123	042101
7899	064302	051104	051505	020123
7900	064310	044504	020104	047516
7901	064316	020124	047111	051103
7902	064324	046505	047105	020124
7903	064332	043101	042524	020122
7904	064340	020101	042522	042101
7905	064346	005015		
7906	064350	050117	051105	052101
7907	064356	047511	000116	
7908	064362	047111	047506	046522
7909	064370	052101	047511	020116
7910	064376	044504	020104	047516
7911	064404	020124	042522	042101
7912	064412	043040	047522	020115
7913	064420	042524	052123	051105
7914	064426	000		
7915	064427	124	044510	020123
7916	064434	051511	052040	042510
7917	064442	041440	047117	042524
7918	064450	052116	020123	043117
7919	064456	052040	042510	051040
7920	064464	020110	042522	044507
7921	064472	052123	051105	000123
7922	064500	046101	020114	044502
7923	064506	051524	042040	042111
7924	064514	047040	052117	043440
7925	064522	052105	052040	040522
7926	064530	051516	042506	042522
7927	064536	020104	052504	044522
7928	064544	043516	040440	005015
7929	064552	042522	042101	047440

EM141: .ASCIZ/BUS ADDRESS DID NOT INCREMENT AFTER A WRITE/

EM142: .ASCIZ/INFORMATION DID NOT GET WRITTEN TO TESTER/

EM143: .ASCIZ/READ OPERATION DID NOT INCREMENT WORD COUNT/

EM144: .ASCII/BUS ADDRESS DID NOT INCREMENT AFTER A READ/<15><12>

.ASCIZ/OPERATION/

EM145: .ASCIZ/INFORMATION DID NOT READ FROM TESTER/

EM146: .ASCIZ/THIS IS THE CONTENTS OF THE RH REGISTERS/

EM147: .ASCII/ALL BITS DID NOT GET TRANSFERED DURING A/<15><12>

.ASCIZ/READ OPERATION/

7930	064560	042520	040522	044524
7931	064566	047117	000	
7932	064571	122	040505	020104
7933	064576	050117	051105	052101
7934	064604	047511	020116	044504
7935	064612	020104	047516	020124
7936	064620	042523	046505	052040
7937	064626	020117	047527	045522
7938	064634	047054	020117	005015
7939	064642	047111	047506	046522
7940	064650	052101	047511	020116
7941	064656	040527	020123	051124
7942	064664	047101	043123	051105
7943	064672	042105	052040	020117
7944	064700	052123	051117	043501
7945	064706	020105	047514	027103
7946	064714	051050	052502	024506
7947	064722	000		
7948	064723	101	046114	041040
7949	064730	052111	020123	044127
7950	064736	051105	020105	047516
7951	064744	020124	051124	047101
7952	064752	043123	051105	042105
7953	064760	052040	020117	042524
7954	064766	052123	051105	005015
7955	064774	052504	044522	043516
7956	065002	040440	053440	044522
7957	065010	042524	047440	042520
7958	065016	040522	044524	047117
7959	065024	000		
7960	065025	127	044522	042524
7961	065032	047440	042520	040522
7962	065040	044524	047117	042040
7963	065046	042111	047040	052117
7964	065054	053440	044522	042524
7965	065062	052040	020117	042524
7966	065070	052123	051105	000
7967	065075	104	046102	051440
7968	065102	052105	047440	020116
7969	065110	020101	020062	047527
7970	065116	042122	052040	040522
7971	065124	051516	042506	020122
7972	065132	044527	044124	041040
7973	065140	044501	005015	
7974	065144	042523	020124	047111
7975	065152	051040	041510	021123
7976	065160	000		
7977	065161	104	046102	051440
7978	065166	052105	044440	020116
7979	065174	044122	051503	020063
7980	065202	047117	040440	030440
7981	065210	053440	051117	020104
7982	065216	042522	042101	043040
7983	065224	047522	006515	000012
7984	065232	047101	042440	042526
7985	065240	020116	042101	051104

EM150: .ASCII/READ OPERATION DID NOT SEEM TO WORK,NO /<15><12>

.ASCIZ/INFORMATION WAS TRANSFERED TO STORAGE LOC.(RBUF)/

EM151: .ASCII/ALL BITS WHERE NOT TRANSFERED TO TESTER/<15><12>

.ASCIZ/DURING A WRITE OPERATION/

EM152: .ASCIZ/WRITE OPERATION DID NOT WRITE TO TESTER/

EM153: .ASCII/DBL SET ON A 2 WORD TRANSFER WITH BAI/<15><12>

.ASCIZ/SET IN RHCS2/

EM154: .ASCIZ/DBL SET IN RHCS3 ON A 1 WORD READ FROM/<15><12>

.ASCIZ/AN EVEN ADDRESS/

H12

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 151

7986	065246	051505	000123
7987	065252	041104	020114
7988	065260	020124	047117
7989	065266	031040	053440
7990	065274	020104	051127
7991	065302	020105	042522
7992	065310	053440	052111
7993	065316	040502	020111
7994	065324	006524	012
7995	065327	111	020116
7996	065334	051503	000062
7997	065340	041104	020114
7998	065346	020124	047117
7999	065354	031040	053440
8000	065362	020104	051124
8001	065370	043123	051105
8002	065376	044522	042524
8003	065404	012	
8004	065405	106	047522
8005	065412	047101	047440
8006	065420	040440	042104
8007	065426	051523	000
8008	065431	104	046102
8009	065436	042111	047040
8010	065444	051440	052105
8011	065452	020116	020101
8012	065460	047527	042122
8013	065466	044522	042524
8014	065474	053105	043056
8015	065502	020115	047101
8016	065510	042526	006516
8017	065515	101	042104
8018	065522	051523	000
8019	065525	104	046102
8020	065532	052105	047440
8021	065540	020101	020062
8022	065546	042122	053440
8023	065554	042524	051040
8024	065562	051105	042523
8025	065570	051106	046517
8026	065576	020116	042117
8027	065604	042101	051104
8028	065612	000123	
8029	065614	041104	020114
8030	065622	020124	047117
8031	065630	031440	053440
8032	065636	020104	051127
8033	065644	020105	042522
8034	065652	051522	006505
8035	065657	106	047522
8036	065664	047101	047440
8037	065672	040440	042104
8038	065700	051523	000
8039	065703	104	046102
8040	065710	042111	047040
8041	065716	051440	052105

EM155: .ASCII/DBL SET ON A 2 WORD WRITE REV. WITH BAI SET/(15)(12)

.ASCIZ/IN RHCS2/

EM156: .ASCII/DBL SET ON A 2 WORD TRANSFER(WRITE)/(15)(12)

.ASCIZ/FROM AN ODD ADDRESS/

EM157: .ASCII/DBL DID NOT SET ON A 2 WORD WRITE REV.FROM AN EVEN/(15)(12)

.ASCIZ/ADDRESS/

EM160: .ASCII/DBL SET ON A 2 WORD WRITE REVERSE/(15)(12)

.ASCIZ/FROM AN ODD ADDRESS/

EM161: .ASCII/DBL SET ON A 3 WORD WRITE REVERSE/(15)(12)

.ASCIZ/FROM AN ODD ADDRESS/

EM162: .ASCII/DBL DID NOT SET ON A 2 WORD READ FROM AN/(15)(12)

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 152

8042	065724	020116	020101	020062
8043	065732	047527	042122	051040
8044	065740	040505	020104	051106
8045	065746	046517	040440	006516
8046	065754	012		
8047	065755	105	042526	020116
8048	065762	042101	051104	051505
8049	065770	000123		
8050	065772	041104	020114	042523
8051	066000	020124	047117	040440
8052	066006	031040	053440	051117
8053	066014	020104	042522	042101
8054	066022	043040	047522	006515
8055	066030	012		
8056	066031	101	020116	042117
8057	066036	020104	042101	051104
8058	066044	051505	000123	
8059	066050	041104	020114	042523
8060	066056	020124	047117	040440
8061	066064	031040	053440	051117
8062	066072	020104	042522	042101
8063	066100	051040	053105	051105
8064	066106	042523	005015	
8065	066112	051106	046517	040440
8066	066120	020116	053105	047105
8067	066126	040440	042104	042522
8068	066134	051523	000	
8069	066137	104	046102	042040
8070	066144	042111	047040	052117
8071	066152	051440	052105	047440
8072	066160	020116	020101	020062
8073	066166	047527	042122	051040
8074	066174	040505	020104	042522
8075	066202	042526	051522	006505
8076	066210	012		
8077	066211	106	047522	020115
8078	066216	047101	047440	042104
8079	066224	040440	042104	042522
8080	066232	051523	000	
8081	066235	104	046102	051440
8082	066242	052105	047440	020116
8083	066250	020101	020063	047527
8084	066256	042122	051040	040505
8085	066264	020104	051106	046517
8086	066272	005015		
8087	066274	047101	042440	042526
8088	066302	020116	042101	051104
8089	066310	051505	000123	
8090	066314	041104	020114	044504
8091	066322	020104	047516	020124
8092	066330	042523	020124	047117
8093	066336	040440	031440	053440
8094	066344	051117	020104	042522
8095	066352	042101	051040	053105
8096	066360	051105	042523	005015
8097	066366	051106	046517	040440

.ASCIZ/EVEN ADDRESS/

EM163: .ASCII/DBL SET ON A 2 WORD READ FROM/⟨15⟩⟨12⟩

.ASCIZ/AN ODD ADDRESS/

EM164: .ASCII/DBL SET ON A 2 WORD READ REVERSE/⟨15⟩⟨12⟩

.ASCIZ/FROM AN EVEN ADDRESS/

EM165: .ASCII/DBL DID NOT SET ON A 2 WORD READ REVERSE/⟨15⟩⟨12⟩

.ASCIZ/FROM AN ODD ADDRESS/

EM166: .ASCII/DBL SET ON A 3 WORD READ FROM/⟨15⟩⟨12⟩

.ASCIZ/AN EVEN ADDRESS/

EM167: .ASCII/DBL DID NOT SET ON A 3 WORD READ REVERSE/⟨15⟩⟨12⟩

.ASCIZ/FROM AN EVEN ADDRESS/

8098	066374	020116	053105	047105	
8099	066402	040440	042104	042522	
8100	066410	051523	000		
8101	066413	124	042522	051040	EM171: .ASCIZ/TRE READS AS SET PGE AND SC SHOULD BE SET/
8102	066420	040505	051504	040440	
8103	066426	020123	042523	020124	
8104	066434	043520	020105	047101	
8105	066442	020104	041523	051440	
8106	066450	047510	046125	020104	
8107	066456	042502	051440	052105	
8108	066464	000			
8109	066465	123	020103	044123	EM172: .ASCIZ/SC SHOULD BE SET/
8110	066472	052517	042114	041040	
8111	066500	020105	042523	000124	
8112	066506	042122	020131	047111	EM173: .ASCIZ/RDY IN RHCS1 DID NOT CAUSE AN INTERRUPT WITH IE SET/
8113	066514	051040	041510	030523	
8114	066522	042040	042111	047040	
8115	066530	052117	041440	052501	
8116	066536	042523	040440	020116	
8117	066544	047111	042524	051122	
8118	066552	050125	020124	044527	
8119	066560	044124	044440	020105	
8120	066566	042523	000124		
8121	066572	042511	053440	046111	EM174: .ASCIZ/IE WILL NOT SET IN RHCS1/
8122	066600	020114	047516	020124	
8123	066606	042523	020124	047111	
8124	066614	051040	041510	030523	
8125	066622	000			
8126	066623	111	020105	040510	EM175: .ASCIZ/IE HAS AN OPEN GOING TO THE BUS/
8127	066630	020123	047101	047440	
8128	066636	042520	020116	047507	
8129	066644	047111	020107	047524	
8130	066652	052040	042510	041040	
8131	066660	051525	000		
8132	066663	122	041510	031523	EM176: .ASCIZ/RHCS3 HAS AN ERROR BIT SET/
8133	066670	044040	051501	040440	
8134	066676	020116	051105	047522	
8135	066704	020122	044502	020124	
8136	066712	042523	000124		
8137	066716	046104	020124	047101	EM177: .ASCIZ/DLT AND TRE ARE SET, SC SHOULD BE SET/
8138	066724	020104	051124	020105	
8139	066732	051101	020105	042523	
8140	066740	026124	041523	051440	
8141	066746	047510	046125	020104	
8142	066754	042502	051440	052105	
8143	066762	000			
8144	066763	110	041111	052131	EM200: .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHWC NOT WORKING PROPERLY/
8145	066770	020105	046054	041117	
8146	066776	052131	020105	040507	
8147	067004	042524	043040	051117	
8148	067012	051040	053510	020103	
8149	067020	047516	020124	047527	
8150	067026	045522	047111	020107	
8151	067034	051120	050117	051105	
8152	067042	054514	000		
8153	067045	110	041111	052131	EM201: .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHDB NOT WORKING PROPERLY/

K12

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 154

8154	067052	020105	046054	041117
8155	067060	052131	020105	040507
8156	067066	042524	043040	051117
8157	067074	051040	042110	020102
8158	067102	047516	020124	047527
8159	067110	045522	047111	020107
8160	067116	051120	050117	051105
8161	067124	054514	000	
8162	067127	110	041111	052131
8163	067134	020105	046054	041117
8164	067142	052131	020105	040507
8165	067150	042524	043040	051117
8166	067156	051040	041110	020101
8167	067164	047516	020124	047527
8168	067172	045522	047111	020107
8169	067200	051120	050117	051105
8170	067206	054514	000	
8171	067211	124	042510	041040
8172	067216	051525	040440	042104
8173	067224	042522	051523	044440
8174	067232	020123	047111	047503
8175	067240	051122	041505	020124
8176	067246	052111	051440	047510
8177	067254	046125	020104	042502
8178	067262	030440	030065	030060
8179	067270	000		
8180	067271	124	051505	042524
8181	067276	020122	040504	040524
8182	067304	041040	043125	042506
8183	067312	020122	047504	051505
8184	067320	047040	052117	041440
8185	067326	047117	040524	047111
8186	067334	052040	042510	041440
8187	067342	051117	042522	052103
8188	067350	044440	043116	000117
8189	067356	044122	042040	042111
8190	067364	047040	052117	044440
8191	067372	052116	051105	050125
8192	067400	020124	047514	045517
8193	067406	040440	020124	051503
8194	067414	020061	047524	051440
8195	067422	042505	044440	020106
8196	067430	042511	044440	020123
8197	067436	042523	000124	
8198	067442	044122	041527	051440
8199	067450	047510	046125	020104
8200	067456	042502	055040	051105
8201	067464	000117		
8202				
8203	067466	051124	047101	043123
8204	067474	051105	053440	051501
8205	067502	042040	047117	020105
8206	067510	047117	050040	051117
8207	067516	020124	000102	
8208	067522	041520	020040	020040
8209	067530	020040	042524	052123

EM202: .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHBA NOT WORKING PROPERLY/

EM203: .ASCIZ/THE BUS ADDRESS IS INCORRECT IT SHOULD BE 15000/

EM204: .ASCIZ/TESTER DATA BUFFER DOES NOT CONTAIN THE CORRECT INFO/

EM205: .ASCIZ/RH DID NOT INTERRUPT LOOK AT CSI TO SEE IF IE IS SET/

EM206: .ASCIZ/RHWC SHOULD BE ZERO/

EM207: .ASCIZ/TRANSFER WAS DONE ON PORT B/

DH1: .ASCII/PC TEST RHWC CONTENTS RHWC/(15)<12>

L12

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 155

8210	067536	020040	020040	044122				
8211	067544	041527	020040	020040				
8212	067552	047503	052116	047105				
8213	067560	051524	051040	053510				
8214	067566	006503	012					
8215	067571	040	020040	020040	.ASCIZ/	NO.		SHOULD HAVE BEEN/
8216	067576	020040	047040	027117				
8217	067604	020040	020040	020040				
8218	067612	020040	020040	020040				
8219	067620	051440	047510	046125				
8220	067626	020104	040510	042526				
8221	067634	041040	042505	000116				
8222	067642	041520	020040	020040	DH2:	.ASCII/PC	TEST	RHBAE CONTENTS RHBAE/(15)(12)
8223	067650	020040	042524	052123				
8224	067656	020040	020040	044122				
8225	067664	040502	020105	020040				
8226	067672	047503	052116	047105				
8227	067700	051524	051040	041110				
8228	067706	042501	005015					
8229	067712	020040	020040	020040	.ASCIZ/	NO.		SHOULD HAVE BEEN/
8230	067720	020040	047516	020056				
8231	067726	020040	020040	020040				
8232	067734	020040	020040	020040				
8233	067742	044123	052517	042114				
8234	067750	044040	053101	020105				
8235	067756	042502	047105	000				
8236	067763	120	020103	020040	DH3:	.ASCII/PC	TEST	RHBA CONTENTS RHBA/(15)(12)
8237	067770	020040	052040	051505				
8238	067776	020124	020040	051040				
8239	070004	041110	020101	020040				
8240	070012	041440	047117	042524				
8241	070020	052116	020123	044122				
8242	070026	040502	005015					
8243	070032	020040	020040	020040	.ASCIZ/	NO.		SHOULD HAVE BEEN/
8244	070040	020040	047516	020056				
8245	070046	020040	020040	020040				
8246	070054	020040	020040	020040				
8247	070062	044123	052517	042114				
8248	070070	044040	053101	020105				
8249	070076	042502	047105	000				
8250	070103	120	020103	020040	DH4:	.ASCII/PC	TEST	RHDB CONTENTS RHDB/(15)(12)
8251	070110	020040	052040	051505				
8252	070116	020124	020040	051040				
8253	070124	042110	020102	020040				
8254	070132	041440	047117	042524				
8255	070140	052116	020123	044122				
8256	070146	041104	005015					
8257	070152	020040	020040	020040	.ASCIZ/	NO.		SHOULD HAVE BEEN/
8258	070160	020040	047516	020056				
8259	070166	020040	020040	020040				
8260	070174	020040	020040	020040				
8261	070202	044123	052517	042114				
8262	070210	044040	053101	020105				
8263	070216	042502	047105	000				
8264	070223	120	020103	020040	DH5:	.ASCII/PC	TEST	RHCS2 TRE AND SC/(15)(12)
8265	070230	020040	052040	051505				

M12

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 156

8266	070236	020124	020040	051040				
8267	070244	041510	031123	020040				
8268	070252	052040	042522	040440				
8269	070260	042116	051440	006503				
8270	070266	012						
8271	070267	040	020040	020040	.ASCIZ/	NO.		BITS/
8272	070274	020040	047040	027117				
8273	070302	020040	020040	020040				
8274	070310	020040	020040	020040				
8275	070316	020040	020040	041040				
8276	070324	052111	000123					
8277	070330	041520	020040	020040	DH11:	.ASCII/PC	TEST	CONTENTS OF/(15)<12>
8278	070336	020040	042524	052123				
8279	070344	020040	020040	047503				
8280	070352	052116	047105	051524				
8281	070360	047440	006506	012				
8282	070365	040	020040	020040	.ASCIZ/	NO.		RHCS2/
8283	070372	020040	047040	027117				
8284	070400	020040	020040	020040				
8285	070406	020040	044122	051503				
8286	070414	000062						
8287	070416	041520	020040	020040	DH34:	.ASCII/PC	TEST	DEVICE/(15)<12>
8288	070424	020040	042524	052123				
8289	070432	020040	020040	042504				
8290	070440	044526	042503	005015				
8291	070446	020040	020040	020040	.ASCIZ/	NO.		CODE/
8292	070454	020040	047516	020056				
8293	070462	020040	020040	047503				
8294	070470	042504	000					
8295	070473	120	000103		DH35:	.ASCIZ/PC/		
8296	070476	041520	020040	020040	DH36:	.ASCII/PC	TEST	FAILING/(15)<12>
8297	070504	020040	042524	052123				
8298	070512	020040	020040	040506				
8299	070520	046111	047111	006507				
8300	070526	012						
8301	070527	040	020040	020040	.ASCIZ/	NO.		ADDRESS/
8302	070534	020040	047040	027117				
8303	070542	020040	020040	040440				
8304	070550	042104	042522	051523				
8305	070556	000						
8306	070557	120	020103	020040	DH41:	.ASCIZ/PC	TEST	NUMBER/
8307	070564	020040	052040	051505				
8308	070572	020124	052516	041115				
8309	070600	051105	000					
8310	070603	120	020103	020040	DH52:	.ASCII/PC	TEST	ADDRESS DATA RHAS/(15)<12>
8311	070610	020040	052040	051505				
8312	070616	020124	020040	040440				
8313	070624	042104	042522	051523				
8314	070632	020040	040504	040524				
8315	070640	020040	051040	040510				
8316	070646	006523	012					
8317	070651	040	020040	020040	.ASCIZ/	NO.		CONTENTS/
8318	070656	020040	047040	027117				
8319	070664	020040	020040	041440				
8320	070672	047117	042524	052116				
8321	070700	000123						

N12

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 157

8322	070702	041520	020040	020040	DH71:	.ASCII/PC	TEST	DEVICE/	<15><12>
8323	070710	020040	042524	052123					
8324	070716	020040	020040	042504					
8325	070724	044526	042503	005015					
8326	070732	020040	020040	020040		.ASCIZ/	NO.	NUMBER/	
8327	070740	020040	047516	020056					
8328	070746	020040	020040	052516					
8329	070754	041115	051105	000					
8330	070761	120	020103	020040	DH72:	.ASCII/PC	TEST	CONTENTS OF/	<15><12>
8331	070766	020040	052040	051505					
8332	070774	020124	020040	041440					
8333	071002	047117	042524	052116					
8334	071010	020123	043117	005015					
8335	071016	020040	020040	020040		.ASCIZ/	NO.	REGISTER/	
8336	071024	020040	047516	020056					
8337	071032	020040	020040	051040					
8338	071040	043505	051511	042524					
8339	071046	000122							
8340	071050	041520	020040	020040	DH76:	.ASCIZ/PC	TEST NO.	RHBAE	RHBA/
8341	071056	052040	051505	020124					
8342	071064	047516	020056	051040					
8343	071072	041110	042501	020040					
8344	071100	051040	041110	000101					
8345	071106	041520	020040	020040	DH105:	.ASCIZ/PC	TEST NO.	RHBAE	RHBA RHWC/
8346	071114	052040	051505	020124					
8347	071122	047516	020056	044122					
8348	071130	040502	020105	020040					
8349	071136	044122	040502	020040					
8350	071144	020040	044122	041527					
8351	071152	000							
8352	071153	120	020103	020040	DH111:	.ASCIZ/PC	TEST NO.	RHCS1	RHBA RHWC/
8353	071160	020040	042524	052123					
8354	071166	047040	027117	051040					
8355	071174	041510	030523	020040					
8356	071202	051040	041110	020101					
8357	071210	020040	051040	053510					
8358	071216	000103							
8359	071220	041520	020040	020040	DH121:	.ASCIZ/PC	TEST NO.	RHCS1	RHCS2/
8360	071226	052040	051505	020124					
8361	071234	047516	020056	044122					
8362	071242	051503	020061	020040					
8363	071250	044122	051503	000062					
8364	071256	041520	020040	020040	DH130:	.ASCIZ/PC	TEST NO.	RHCS1/	
8365	071264	052040	051505	020124					
8366	071272	047516	020056	044122					
8367	071300	051503	000061						
8368	071304	041520	020040	020040	DH132:	.ASCIZ/PC	TEST NO.	RHBAE	RHBA RHCS2 RHCS3/
8369	071312	052040	051505	020124					
8370	071320	047516	020056	044122					
8371	071326	040502	020105	020040					
8372	071334	044122	040502	020040					
8373	071342	020040	044122	051503					
8374	071350	020062	020040	044122					
8375	071356	051503	000063						
8376	071362	041520	020040	020040	DH142:	.ASCIZ/PC	TEST NO.	EVENAD	RHTDB/
8377	071370	052040	051505	020124					

B13

MASSBUS RMTD AND RMI: DIAGNOSTIC
 CTRMBC.P11 END OF PASS ROUTINE

MACY11 27.7321 01-OCT-76 09:03 PAGE 158

0378	071376	047516	020056	053105
0379	071404	047105	042101	020040
0380	071412	044122	042124	000102
0381	071420	041520	020040	020040
0382	071426	052040	051505	020124
0383	071434	047516	020056	044122
0384	071442	051503	020061	020040
0385	071450	044122	051503	020062
0386	071456	020040	044122	041527
0387	071464	000		
0388	071465	120	020103	020040
0389	071472	020040	042524	052123
0390	071500	047040	027117	051040
0391	071506	052502	020106	020040
0392	071514	051040	052110	041104
0393	071522	000		
0394	071523	122	041110	042501
0395	071530	020040	051040	041110
0396	071536	020101	020040	051040
0397	071544	041510	031523	000
0398	071551	120	020103	020040
0399	071556	020040	042524	052123
0400	071564	047040	027117	051040
0401	071572	041510	031523	000
0402	071577	120	020103	020040
0403	071604	020040	052040	051505
0404	071612	020124	020040	042040
0405	071620	053105	041511	020105
0406	071626	051040	041510	031123
0407	071634	005015		
0408	071636	020040	020040	020040
0409	071644	020040	047516	020056
0410	071652	020040	020040	052516
0411	071660	041115	051105	020040
0412	071666	000		
0413		071670		
0414	071670	001116	003454	003444
0415	071676	001162	000000	
0416	071702	001116	003454	003416
0417	071710	001162	000000	
0418	071714	001116	003454	003414
0419	071722	001162	000000	
0420	071726	001116	003454	003426
0421	071734	001162	000000	
0422	071740	001116	003454	003422
0423	071746	001162	000000	
0424	071752	001116	003454	003422
0425	071760	000000		
0426	071762	001116	003454	003434
0427	071770	000000		
0428	071772	001116	000000	
0429	071776	001116	003454	003330
0430	072004	000000		
0431	072006	001116	003454	000000
0432	072014	001116	003454	003416
0433	072022	001162	003412	000000

DM146: .ASCIZ/PC TEST NO. RHCS1 RHCS2 RHWC/

DM147: .ASCIZ/PC TEST NO. RBUF RHTDB/

DM170: .ASCIZ/RHBAE RHBA RHCS3/

DM171: .ASCIZ/PC TEST NO. RHCS3/

DM172: .ASCII/PC TEST DEVICE RHCS2/1512

.ASCIZ/ NO. NUMBER /

EVEN

DT1: .WORD SERRPC, TSTNM, WC, \$REGO, 0

DT2: .WORD SERRPC, TSTNM, BAE, \$REGO, 0

DT3: .WORD SERRPC, TSTNM, BA, \$REGO, 0

DT4: .WORD SERRPC, TSTNM, DB, \$REGO, 0

DT5: .WORD SERRPC, TSTNM, CS2, \$REGO, 0

DT11: .WORD SERRPC, TSTNM, CS2, 0

DT34: .WORD SERRPC, TSTNM, DT, 0

DT35: .WORD SERRPC, 0

DT36: .WORD SERRPC, TSTNM, RHCS1, 0

DT41: .WORD SERRPC, TSTNM, 0

DT52: .WORD SERRPC, TSTNM, BAE, \$REGO, AS, 0

8434	072030	001116	003454	004100	DT71:	.WORD	SERRPC,TSTNM,RBUF,0
8435	072036	000000					
8436	072040	001116	003454	003416	DT76:	.WORD	SERRPC,TSTNM,BAE,BA,0
8437	072046	003414	000000				
8438	072052	001116	003454	003416	DT105:	.WORD	SERRPC,TSTNM,BAE,BA,WC,0
8439	072060	003414	003444	000000			
8440	072066	001116	003454	003420	DT111:	.WORD	SERRPC,TSTNM,CS1,BA,WC,0
8441	072074	003414	003444	000000			
8442	072102	001116	003454	003420	DT121:	.WORD	SERRPC,TSTNM,CS1,CS2,0
8443	072110	003422	000000				
8444	072114	001116	003454	003420	DT130:	.WORD	SERRPC,TSTNM,CS1,0
8445	072122	000000					
8446	072124	001116	003454	003416	DT132:	.WORD	SERRPC,TSTNM,BAE,BA,CS2,CS3,0
8447	072132	003414	003422	003424			
8448	072140	000000					
8449	072142	001116	003454	004000	DT142:	.WORD	SERRPC,TSTNM,EVENAD,SREGO,0
8450	072150	001162	000000				
8451	072154	001116	003454	003420	DT146:	.WORD	SERRPC,TSTNM,CS1,CS2,WC,0
8452	072162	003422	003444	000000			
8453	072170	001116	003454	004100	DT147:	.WORD	SERRPC,TSTNM,RBUF,SREGO,0
8454	072176	001162	000000				
8455	072202	003416	003414	003424	DT170:	.WORD	BAE,BA,CS3,0
8456	072210	000000					
8457	072212	001116	003454	003424	DT171:	.WORD	SERRPC,TSTNM,CS3,0
8458	072220	000000					
8459	072222	001116	003454	004100	DT172:	.WORD	SERRPC,TSTNM,RBUF,CS2,0
8460	072230	003422	000000				
8461					.EVEN		
8462	072234	000	000	000	DF1:	.BYTE	0,0,0,0
8463	072237	000					
8464	072240	000	000	000	DF2:	.BYTE	0,0,0,0
8465	072243	000					
8466	072244	000	000	000	DF3:	.BYTE	0,0,0,0
8467	072247	000					
8468	072250	000	000	000	DF4:	.BYTE	0,0,0,0
8469	072253	000					
8470	072254	000	000	000	DF5:	.BYTE	0,0,0,0
8471	072257	000					
8472	072260	000	000	000	DF11:	.BYTE	0,0,0
8473	072263	000	000	000	DF34:	.BYTE	0,0,0
8474	072266	000			DF35:	.BYTE	0
8475	072267	000	000	000	DF36:	.BYTE	0,0,0
8476	072272	000	000		DF41:	.BYTE	0,0
8477	072274	000	000	000	DF52:	.BYTE	0,0,0,0,0
8478	072277	000	000				
8479	072301	000	000	000	DF71:	.BYTE	0,0,0
8480	072304	000	000	000	DF76:	.BYTE	0,0,0,0
8481	072307	000					
8482	072310	000	000	000	DF105:	.BYTE	0,0,0,0,0
8483	072313	000	000				
8484	072315	000	000	000	DF132:	.BYTE	0,0,0,0,0,0
8485	072320	000	000	000			
8486	072323	000	000	000	DF170:	.BYTE	0,0,0
8487	072326	000	000	000	DF172:	.BYTE	0,0,0,0
8488	072331	000					
8489					.EVEN		

D13

MASSBUS RHPD AND RH11 DIAGNOSTIC
CZRHBC.F11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 160

072332	0000000
072334	050262
072336	050322
072340	050347
072342	050406
072344	050445
072346	050476
072350	050530
072352	050561
072354	050625
072356	050656
072360	050706
072362	050737
072364	050767
072366	051017
072370	051057
072372	051117
072374	051161
072376	051223
072400	051266
072402	051342
072404	051404
072406	051446
072410	051510
072412	051552
072414	051614
072416	051661
072420	051741
072422	052016
072424	052073
072426	052151
072430	052225
072432	052317
072434	052404
072436	052450
072440	052521
072442	052577
072444	052666
072446	052731
072450	053016
072452	053075
072454	053162
072456	053241
072460	063320
072462	053364
072464	053430
072466	053467
072470	053543
072472	053612
072474	053665
072476	053733
072500	054006
072502	054055
072504	054130
072506	054176

:*****
HEADER: 0

HED1
HED2
HED3
HED4
HED5
HED6
HED7
HED10
HED11
HED12
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HED66

E13

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.F11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 161

0546	072510	054252
0547	072512	054321
0548	072514	054375
0549	072516	054443
0550	072520	054517
0551	072522	054566
0552	072524	054642
0553	072526	054710

HE067
HE070
HE071
HE072
HE073
HE074
HE075
HE076

.SBTTL SCOPE HANDLER ROUTINE

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8554
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8567
8568 072530
8569 072530 032777 040000 106402
8570 072536 001111
8571
8572 072540 000416
8573
8574 072542 013746 000004
8575 072546 012737 072566 000004
8576 072554 005737 177060
8577 072560 012637 000004
8578 072564 000463
8579 072566 022626
8580 072570 012637 000004
8581 072574 000423
8582 072576
8583 072576 032777 000400 106334
8584 072604 001404
8585 072606 127737 106326 001102
8586 072614 001462
8587 072616 105737 001103
8588 072622 001421
8589 072624 123737 001115 001103
8590 072632 101015
8591 072634 032777 001000 106276
8592 072642 001404
8593 072644 013737 001110 001106
8594 072652 000443
8595 072654 105037 001103
8596 072660 005037 001212
8597 072664 000415
8598 072666 032777 004000 106244
8599 072674 001011
8600 072676 005737 001100
8601 072702 001406
8602 072704 005237 001104
8603 072710 023737 001212 001104
8604 072716 002021
8605 072720 012737 000001 001104
8606 072726 013737 072776 001212
8607 072734 105237 001102
8608 072740 011637 001106
8609 072744 011637 001110

;*****
;THIS ROUTINE CONTROLS THE LOOPING OF SUBTESTS. IT WILL INCREMENT
;AND LOAD THE TEST NUMBER($STNM) INTO THE DISPLAY REG.(DISPLAY<7:0>)
;AND LOAD THE ERROR FLAG ($ERFLG) INTO DISPLAY<15:08>
;THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
;SW14=1 LOOP ON TEST
;SW11=1 INHIBIT ITERATIONS
;SW09=1 LOOP ON ERROR
;SW08=1 LOOP ON TEST IN SWR<7:0>
;CALL
;SCOPE ;:SCOPE=10T

$SCOPE:
1$: BIT $BIT14,$SWR ;:LOOP ON PRESENT TEST?
   BNE $OVER ;:YES IF SW14=1
;*****START OF CODE FOR THE XOR TESTER*****
$XTSTR: BR 6$ ;:IF RUNNING ON THE "XOR" TESTER CHANGE
;THIS INSTRUCTION TO A "NOP" (NOP=240)
;SAVE THE CONTENTS OF THE ERROR VECTOR
   MOV 2*$ERRVEC, -(SP) ;:SET FOR TIMEOUT
   MOV $SS, 2*$ERRVEC ;:TIME OUT ON XOR?
   TST 2*$177060 ;:RESTORE THE ERROR VECTOR
   MOV (SP)+, 2*$ERRVEC ;:GO TO THE NEXT TEST
   BR $SVLAD ;:CLEAR THE STACK AFTER A TIME OUT
5$: CMP (SP)+, (SP)+ ;:RESTORE THE ERROR VECTOR
   MOV (SP)+, 2*$ERRVEC ;:LOOP ON THE PRESENT TEST
   BR 7$
6$;*****END OF CODE FOR THE XOR TESTER*****
   BIT $BIT08,$SWR ;:LOOP ON SPEC. TEST?
   BEQ 2$ ;:BR IF NO
   CMPB 2*$SWR,$STNM ;:ON THE RIGHT TEST? SWR<7:0>
   BNE $OVER ;:BR IF YES
   TSTB $ERFLG ;:HAS AN ERROR OCCURRED?
   BEQ 3$ ;:BR IF NO
   CMPB $ERMAX,$ERFLG ;:MAX. ERRORS FOR THIS TEST OCCURRED?
   BHI 3$ ;:BR IF NO
   BIT $BIT09,$SWR ;:LOOP ON ERROR?
   BEQ 4$ ;:BR IF NO
7$: MOV $LPERR,$LPADR ;:SET LOOP ADDRESS TO LAST SCOPE
   BR $OVER
4$: CLRB $ERFLG ;:ZERO THE ERROR FLAG
   CLR $TIMES ;:CLEAR THE NUMBER OF ITERATIONS TO MAKE
   BR 1$ ;:ESCAPE TO THE NEXT TEST
3$: BIT $BIT11,$SWR ;:INHIBIT ITERATIONS?
   BNE 1$ ;:BR IF YES
   TST $PASS ;:IF FIRST PASS OF PROGRAM
   BEQ 1$ ;:INHIBIT ITERATIONS
   INC $ICNT ;:INCREMENT ITERATION COUNT
   CMP $TIMES,$ICNT ;:CHECK THE NUMBER OF ITERATIONS MADE
   BGE $OVER ;:BR IF MORE ITERATION REQUIRED
   MOV #1,$ICNT ;:REINITIALIZE THE ITERATION COUNTER
   MOV $MXCNT,$TIMES ;:SET NUMBER OF ITERATIONS TO DO
$SVLAD: INCB $STNM ;:COUNT TEST NUMBERS
   MOV (SP), $LPADR ;:SAVE SCOPE LOOP ADDRESS
   MOV (SP), $LPERR ;:SAVE ERROR LOOP ADDRESS

```



```

8610 072750 005037 001214          CLR      $ESCAPE          ;; CLEAR THE ESCAPE FROM ERROR ADDRESS
8611 072754 112737 000001 001115    MOV      #1,$ERMAX          ;; ONLY ALLOW ONE(1) ERROR ON NEXT TEST
8612 072762 013777 001102 106152    $OVER:  MOV      $STNM,$DISPLAY      ;; DISPLAY TEST NUMBER
8613 072770 013716 001106          MOV      $LPADR,$SP          ;; FUDGE RETURN ADDRESS
8614 072774 000002          RTI                          ;; FIXES PS
8615 072776 000100          $MXCNT: 100          ;; MAX. NUMBER OF ITERATIONS
8616                                     .SBTTL  POWER DOWN AND UP ROUTINES
8617
8618                                     ;*****
8619                                     ; POWER DOWN ROUTINE
8620 073000 012737 073140 000024    $PWRDN: MOV      $SILLUP,$PWRVEC      ;; SET FOR FAST UP
8621 073006 012737 000340 000026    MOV      #340,$PWRVEC+2      ;; PRIO:7
8622 073014 010046          MOV      RO,-($SP)          ;; PUSH RO ON STACK
8623 073016 010146          MOV      R1,-($SP)          ;; PUSH R1 ON STACK
8624 073020 010246          MOV      R2,-($SP)          ;; PUSH R2 ON STACK
8625 073022 010346          MOV      R3,-($SP)          ;; PUSH R3 ON STACK
8626 073024 010446          MOV      R4,-($SP)          ;; PUSH R4 ON STACK
8627 073026 010546          MOV      R5,-($SP)          ;; PUSH R5 ON STACK
8628 073030 017746 106104          MOV      $SWR,-($SP)          ;; PUSH $SWR ON STACK
8629 073034 010637 073144          MOV      SP,$SAVR6          ;; SAVE SP
8630 073040 012737 073052 000024    MOV      $PWRUP,$PWRVEC      ;; SET UP VECTOR
8631 073046 000000          HALT
8632 073050 000776          BR      -2                  ;; HANG UP
8633
8634                                     ;*****
8635                                     ; POWER UP ROUTINE
8636 073052 012737 073140 000024    $PWRUP: MOV      $SILLUP,$PWRVEC      ;; SET FOR FAST DOWN
8637 073060 013706 073144          MOV      $SAVR6,$SP          ;; GET SP
8638 073064 005037 073144          CLR      $SAVR6          ;; WAIT LOOP FOR THE TTY
8639 073070 005237 073144          1$: INC      $SAVR6          ;; WAIT FOR THE INC
8640 073074 001375          BNE      1$                  ;; OF WORD
8641 073076 012677 106036          MOV      ($SP)+,$SWR          ;; POP STACK INTO $SWR
8642 073102 012605          MOV      ($SP)+,R5          ;; POP STACK INTO R5
8643 073104 012604          MOV      ($SP)+,R4          ;; POP STACK INTO R4
8644 073106 012603          MOV      ($SP)+,R3          ;; POP STACK INTO R3
8645 073110 012602          MOV      ($SP)+,R2          ;; POP STACK INTO R2
8646 073112 012601          MOV      ($SP)+,R1          ;; POP STACK INTO R1
8647 073114 012600          MOV      ($SP)+,R0          ;; POP STACK INTO R0
8648 073116 012737 073000 000024    MOV      $PWRDN,$PWRVEC      ;; SET UP THE POWER DOWN VECTOR
8649 073124 012737 000340 000026    MOV      #340,$PWRVEC+2      ;; PRIO:7
8650 073132 104401          TYPE          ;; REPORT THE POWER FAILURE
8651 073134 073146          $PWRMG: .WORD  $POWER          ;; POWER FAIL MESSAGE POINTER
8652 073136 000002          RTI
8653 073140 000000          $SILLUP: HALT          ;; THE POWER UP SEQUENCE WAS STARTED
8654 073142 000776          BR      -2                  ;; BEFORE THE POWER DOWN WAS COMPLETE
8655 073144 000000          $SAVR6: 0          ;; PUT THE SP HERE
8656 073146 005015 047520 042527    $POWER: .ASCIZ  (15)<(12)"POWER"
8657 073154 000122
8658                                     .EVEN

```

.SBTTL TYPE ROUTINE

```

*****
:ROUTINE TO TYPE ASCIZ MESSAGE. MESSAGE MUST TERMINATE WITH A 0 BYTE.
:THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
:NOTE1: $NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
:NOTE2: $FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
:NOTE3: $FILLC CONTAINS THE CHARACTER TO FILL AFTER.

```

```

:CALL:
:1) USING A TRAP INSTRUCTION
: TYPE ,MESADR ;;MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
:OR
: TYPE
: MESADR

```

8659
8660
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8670
8671
8672
8673
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8675
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8680
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8688
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8696
8697
8698
8699
8700
8701
8702
8703
8704
8705
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8708
8709
8710
8711
8712
8713
8714

073156 105737 001157
073162 100002
073164 000000
073166 000407
073170 010046
073172 017600 000002
073176 112046
073200 001005
073202 005726
073204 012600
073206 062716 000002
073212 000002
073214 122716 000011
073220 001430
073222 122716 000200
073226 001006
073230 005726
073232 104401
073234 001223
073236 105037 073372
073242 000755
073244 004737 073326
073250 123726 001156
073254 001350
073256 013746 001154
073262 105366 000001
073266 002770
073270 004737 073326
073274 105337 073372
073300 000770

```

$TYPE:  TSTB      $TFPLG      ;; IS THERE A TERMINAL?
        BPL       1$          ;; BR IF YES
        HALT      3$          ;; HALT HERE IF NO TERMINAL
        BR        3$          ;; LEAVE
1$:      MOV       RO, -(SP)    ;; SAVE RO
        MOV       22(SP), RO   ;; GET ADDRESS OF ASCIZ STRING
2$:      MOV      (RO)+, -(SP)  ;; PUSH CHARACTER TO BE TYPED ONTO STACK
        BNE       4$          ;; BR IF IT ISN'T THE TERMINATOR
        TST       (SP)+        ;; IF TERMINATOR POP IT OFF THE STACK
60$:     MOV       (SP)+, RO    ;; RESTORE RO
3$:      ADD       #2, (SP)     ;; ADJUST RETURN PC
        RTI                    ;; RETURN
4$:      CMPB      #HT, (SP)    ;; BRANCH IF (HT)
        BEQ       BS          ;; BRANCH IF NOT (CRLF)
        CMPB      #CRLF, (SP)
        BNE       5$          ;; POP (CR)(LF) EQUIV
        TST       (SP)+        ;; TYPE A CR AND LF
        TYPE
        $CRLF
        CLRB      $CHARCNT    ;; CLEAR CHARACTER COUNT
        BR        2$          ;; GET NEXT CHARACTER
5$:      JSR       PC, $TYPEC   ;; GO TYPE THIS CHARACTER
6$:      CMPB      $FILLC, (SP)+ ;; IS IT TIME FOR FILLER CHARS.?
        BNE       2$          ;; IF NO GO GET NEXT CHAR.
        MOV       $NULL, -(SP) ;; GET # OF FILLER CHARS. NEEDED
        AND THE NULL CHAR.
7$:      DECB      1(SP)        ;; DOES A NULL NEED TO BE TYPED?
        BLT       6$          ;; BR IF NO--GO POP THE NULL OFF OF STACK
        JSR       PC, $TYPEC   ;; GO TYPE A NULL
        DECB      $CHARCNT    ;; DO NOT COUNT AS A COUNT
        BR        7$          ;; LOOP

```

;HORIZONTAL TAB PROCESSOR

```

8$:      MOV      8', (SP)     ;; REPLACE TAB WITH SPACE
9$:      JSR       PC, $TYPEC   ;; TYPE A SPACE
        BITB      #7, $CHARCNT ;; BRANCH IF NOT AT
        BNE       9$          ;; TAB STOP
        TST       (SP)+        ;; POP SPACE OFF STACK

```

073372

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 TYPE ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 165

8715	073324	000724			BR	25	:: GET NEXT CHARACTER
8716	073326	105777	105616		\$TYPEC: TSTB	\$STPS	:: WAIT UNTIL PRINTER IS READY
8717	073332	100375			BPL	\$TYPEC	
8718	073334	116677	000002	105610	MOVB	2(SP), \$STPB	:: LOAD CHAR TO BE TYPED INTO DATA REG.
8719	073342	122766	000015	000002	CMPB	\$CR, 2(SP)	:: IS CHARACTER A CARRIAGE RETURN?
8720	073350	001003			BNE	15	:: BRANCH IF NO
8721	073352	105037	073372		CLRB	\$CHARCNT	:: YES--CLEAR CHARACTER COUNT
8722	073356	000406			BR	\$TYPEX	:: EXIT
8723	073360	122766	000012	000002	15: CMPB	\$LF, 2(SP)	:: IS CHARACTER A LINE FEED?
8724	073366	001402			BEQ	\$TYPEX	:: BRANCH IF YES
8725	073370	105227			INCB	(PC)+	:: COUNT THE CHARACTER
8726	073372	000000			\$CHARCNT: .WORD	0	:: CHARACTER COUNT STORAGE
8727	073374	000207			\$TYPEX: RTS	PC	
8728							

.SBTTL BINARY TO OCTAL (ASCII) AND TYPE

```

*****
THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 6-DIGIT
OCTAL (ASCII) NUMBER AND TYPE IT.
$TYPOS---ENTER HERE TO SETUP SUPPRESS ZEROS AND NUMBER OF DIGITS TO TYPE

```

```

CALL:
MOV     NUM, -(SP)      ;; NUMBER TO BE TYPED
TYPOS   N               ;; CALL FOR TYPEOUT
        N               ;; N=1 TO 6 FOR NUMBER OF DIGITS TO TYPE
        M               ;; M=1 OR 0
                        ;; 1=TYPE LEADING ZEROS
                        ;; 0=SUPPRESS LEADING ZEROS

```

```

$STYPON---ENTER HERE TO TYPE OUT WITH THE SAME PARAMETERS AS THE LAST
$TYPOS OR $TYPOC

```

```

CALL:
MOV     NUM, -(SP)      ;; NUMBER TO BE TYPED
TYPON   N               ;; CALL FOR TYPEOUT

```

```

$TYPOC---ENTER HERE FOR TYPEOUT OF A 16 BIT NUMBER

```

```

CALL:
MOV     NUM, -(SP)      ;; NUMBER TO BE TYPED
TYPOC   N               ;; CALL FOR TYPEOUT

```

8754	073376	017646	000000		\$TYPOS: MOV	2(SP), -(SP)	;; PICKUP THE MODE
8755	073402	116637	000001	073621	MOVB	1(SP), \$OFILL	;; LOAD ZERO FILL SWITCH
8756	073410	112637	073623		MOVB	(SP)+, \$OMODE+1	;; NUMBER OF DIGITS TO TYPE
8757	073414	062716	000002		ADD	#2, (SP)	;; ADJUST RETURN ADDRESS
8758	073420	000406			BR	\$TYPON	
8759	073422	112737	000001	073621	\$TYPOC: MOVB	#1, \$OFILL	;; SET THE ZERO FILL SWITCH
8760	073430	112737	000006	073623	MOVB	#6, \$OMODE+1	;; SET FOR SIX(6) DIGITS
8761	073436	112737	000005	073620	\$TYPON: MOVB	#5, \$OCNT	;; SET THE ITERATION COUNT
8762	073444	010346			MOV	R3, -(SP)	;; SAVE R3
8763	073446	010446			MOV	R4, -(SP)	;; SAVE R4
8764	073450	010546			MOV	R5, -(SP)	;; SAVE R5
8765	073452	113704	073623		MOVB	\$OMODE+1, R4	;; GET THE NUMBER OF DIGITS TO TYPE
8766	073456	005404			NEG	R4	
8767	073460	062704	000006		ADD	#6, R4	;; SUBTRACT IT FOR MAX. ALLOWED
8768	073464	110437	073622		MOVB	R4, \$OMODE	;; SAVE IT FOR USE
8769	073470	113704	073621		MOVB	\$OFILL, R4	;; GET THE ZERO FILL SWITCH
8770	073474	016605	000012		MOV	12(SP), R5	;; PICKUP THE INPUT NUMBER
8771	073500	005003			CLR	R3	;; CLEAR THE OUTPUT WORD
8772	073502	006105		1\$:	ROL	R5	;; ROTATE MSB INTO "C"
8773	073504	000404			BR	3\$	;; GO DO MSB
8774	073506	006105		2\$:	ROL	R5	;; FORM THIS DIGIT
8775	073510	006105			ROL	R5	
8776	073512	006105			ROL	R5	
8777	073514	010503			MOV	R5, R3	
8778	073516	006103		3\$:	ROL	R3	;; GET LSB OF THIS DIGIT
8779	073520	105337	073622		DECB	\$OMODE	;; TYPE THIS DIGIT?
8780	073524	100016			BPL	7\$	;; BR IF NO
8781	073526	042703	177770		BIC	#177770, R3	;; GET RID OF JUNK
8782	073532	001002			BNE	4\$	;; TEST FOR 0
8783	073534	005704			TST	R4	;; SUPPRESS THIS 0?
8784	073536	001403			BEQ	5\$	;; BR IF YES

K13

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11

BINARY TO OCTAL (ASCII) AND TYPE

MACY11 27(732)

01-OCT-76 09:03 PAGE 167

8785	073540	005204		4\$:	INC	R4	::DON'T SUPPRESS ANYMORE 0'S
8786	073542	052703	000060		BIS	#'0,R3	::MAKE THIS DIGIT ASCII
8787	073546	052703	000040	5\$:	BIS	#',R3	::MAKE ASCII IF NOT ALREADY
8788	073552	110337	073616		MOVB	R3,B\$	::SAVE FOR TYPING
8789	073556	104401	073616		TYPE	B\$	::GO TYPE THIS DIGIT
8790	073562	105337	073620	7\$:	DECB	\$OCNT	::COUNT BY 1
8791	073566	003347			BGT	2\$	::BR IF MORE TO DO
8792	073570	002402			BLT	6\$	::BR IF DONE
8793	073572	005204			INC	R4	::INSURE LAST DIGIT ISN'T A BLANK
8794	073574	000744			BR	2\$	::GO DO THE LAST DIGIT
8795	073576	012605		6\$:	MOV	(SP)+,R5	::RESTORE R5
8796	073600	012604			MOV	(SP)+,R4	::RESTORE R4
8797	073602	012603			MOV	(SP)+,R3	::RESTORE R3
8798	073604	016666	000002 000004		MOV	2(SP),4(SP)	::SET THE STACK FOR RETURNING
8799	073612	012616			MOV	(SP)+,(SP)	
8800	073614	000002			RTI		::RETURN
8801	073616	000		8\$:	.BYTE	0	::STORAGE FOR ASCII DIGIT
8802	073617	000			.BYTE	0	::TERMINATOR FOR TYPE ROUTINE
8803	073620	000		\$OCNT:	.BYTE	0	::OCTAL DIGIT COUNTER
8804	073621	000		\$OFILL:	.BYTE	0	::ZERO FILL SWITCH
8805	073622	000000		\$OMODE:	.WORD	0	::NUMBER OF DIGITS TO TYPE

```

8806 .SBTTL CONVERT BINARY TO DECIMAL AND TYPE ROUTINE
8807
8808 ;*****
8809 ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 5-DIGIT
8810 ;*SIGNED DECIMAL (ASCII) NUMBER AND TYPE IT. DEPENDING ON WHETHER THE
8811 ;*NUMBER IS POSITIVE OR NEGATIVE A SPACE OR A MINUS SIGN WILL BE TYPED
8812 ;*BEFORE THE FIRST DIGIT OF THE NUMBER. LEADING ZEROS WILL ALWAYS BE
8813 ;*REPLACED WITH SPACES.
8814 ;*CALL:
8815 ;*      MOV      NUM,-(SP)      ;;PUT THE BINARY NUMBER ON THE STACK
8816 ;*      TYPDS    ;;GO TO THE ROUTINE
8817
8818 073624 STYPDS:
8819 073624 010046 MOV      R0,-(SP)      ;;PUSH R0 ON STACK
8820 073626 010146 MOV      R1,-(SP)      ;;PUSH R1 ON STACK
8821 073630 010246 MOV      R2,-(SP)      ;;PUSH R2 ON STACK
8822 073632 010346 MOV      R3,-(SP)      ;;PUSH R3 ON STACK
8823 073634 010546 MOV      R5,-(SP)      ;;PUSH R5 ON STACK
8824 073636 012746 020200 MOV      #20200,-(SP)  ;;SET BLANK SWITCH AND SIGN
8825 073642 016605 000020 MOV      20(SP),R5      ;;GET THE INPUT NUMBER
8826 073646 100004 BPL      1$              ;;BR IF INPUT IS POS.
8827 073650 005405 NEG      R5              ;;MAKE THE BINARY NUMBER POS.
8828 073652 112766 000055 000001 MOVB     #'-,1(SP)      ;;MAKE THE ASCII NUMBER NEG.
8829 073660 005000 1$:      CLR      R0              ;;ZERO THE CONSTANTS INDEX
8830 073662 012703 074040 MOV      #SDBLK,R3      ;;SETUP THE OUTPUT POINTER
8831 073666 112723 000040 MOVB     #'',(R3)+      ;;SET THE FIRST CHARACTER TO A BLANK
8832 073672 005002 2$:      CLR      R2              ;;CLEAR THE BCD NUMBER
8833 073674 016001 074030 MOV      $DTBL(R0),R1      ;;GET THE CONSTANT
8834 073700 160105 3$:      SUB      R1,R5              ;;FORM THIS BCD DIGIT
8835 073702 002402 BLT      4$              ;;BR IF DONE
8836 073704 005202 INC      R2              ;;INCREASE THE BCD DIGIT BY 1
8837 073706 000774 BR      3$              ;;
8838 073710 060105 4$:      ADD      R1,R5              ;;ADD BACK THE CONSTANT
8839 073712 005702 TST      R2              ;;CHECK IF BCD DIGIT=0
8840 073714 001002 BNE      5$              ;;FALL THROUGH IF 0
8841 073716 105716 TSTB     (SP)              ;;STILL DOING LEADING 0'S?
8842 073720 100407 BMI      7$              ;;BR IF YES
8843 073722 106316 5$:      ASLB     (SP)              ;;MSD?
8844 073724 103003 BCC      6$              ;;BR IF NO
8845 073726 116663 000001 177777 MOVB     1(SP),-1(R3)      ;;YES--SET THE SIGN
8846 073734 052702 000060 6$:      BIS      #'0,R2              ;;MAKE THE BCD DIGIT ASCII
8847 073740 052702 000040 7$:      BIS      #' ,R2              ;;MAKE IT A SPACE IF NOT ALREADY A DIGIT
8848 073744 110223 MOVB     R2,(R3)+      ;;PUT THIS CHARACTER IN THE OUTPUT BUFFER
8849 073746 005720 TST      (R0)+      ;;JUST INCREMENTING
8850 073750 020027 000010 CMP      R0,#10      ;;CHECK THE TABLE INDEX
8851 073754 002746 BLT      2$              ;;GO DO THE NEXT DIGIT
8852 073756 003002 BGT      8$              ;;GO TO EXIT
8853 073760 010502 MOV      R5,R2              ;;GET THE LSD
8854 073762 000764 BR      6$              ;;GO CHANGE TO ASCII
8855 073764 105726 8$:      TSTB     (SP)+      ;;WAS THE LSD THE FIRST NON-ZERO?
8856 073766 100003 BPL      9$              ;;BR IF NO
8857 073770 116663 177777 177776 MOVB     -1(SP),-2(R3)      ;;YES--SET THE SIGN FOR TYPING
8858 073776 105013 9$:      CLRB     (R3)              ;;SET THE TERMINATOR
8859 074000 012605 MOV      (SP)+,R5      ;;POP STACK INTO R5
8860 074002 012603 MOV      (SP)+,R3      ;;POP STACK INTO R3
8861 074004 012602 MOV      (SP)+,R2      ;;POP STACK INTO R2

```


M13

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 169
 DZRHBC.P11 CONVERT BINARY TO DECIMAL AND TYPE ROUTINE

8862	074006	012601		MOV	(SP)+,R1	::POP STACK INTO R1
8863	074010	012600		MOV	(SP)+,R0	::POP STACK INTO R0
8864	074012	104401	074040	TYPE	\$DBLK	::NOW TYPE THE NUMBER
8865	074016	016666	000002 000004	MOV	2(SP),4(SP)	::ADJUST THE STACK
8866	074024	012616		MOV	(SP)+,(SP)	
8867	074026	000002		RTI		::RETURN TO USER
8868	074030	023420		\$DTBL:	10000.	
8869	074032	001750			1000.	
8870	074034	000144			100.	
8871	074036	000012			10.	
8872	074040	000004		\$DBLK:	.BLKW 4	

```

8873 .SBTTL ERROR MESSAGE TYPEOUT ROUTINE
8874
8875 ;*****
8876 ;THIS ROUTINE USES THE "ITEM CONTROL BYTE" (SITEMB) TO DETERMINE WHICH
8877 ;*ERROR IS TO BE REPORTED. IT THEN OBTAINS, FROM THE "ERROR TABLE" (SERRTB),
8878 ;*AND REPORTS THE APPROPRIATE INFORMATION CONCERNING THE ERROR.
8879
8880 SERRTYP:
8881 074050 104401 001223      TYPE      $CRLF      ;"CARRIAGE RETURN" & "LINE FEED"
8882 074054 010046          MOV      RO,-(SP)    ;SAVE RO
8883 074056 005000          CLR      RO          ;PICKUP THE ITEM INDEX
8884 074060 153700 001114    BISB     2(SITEMB,RO)
8885 074064 001004          BNE      1$          ;IF ITEM NUMBER IS ZERO, JUST
8886                                     ;TYPE THE PC OF THE ERROR
8887 074066 013746 001116    MOV      SERRPC,-(SP) ;SAVE SERRPC FOR TYPEOUT
8888                                     ;ERROR ADDRESS
8889 074072 104402          TYP0C     6$         ;GO TYPE--OCTAL ASCII(ALL DIGITS)
8890 074074 000426          BR       6$         ;GET OUT
8891 074076 005300 1$:     DEC      RO          ;ADJUST THE INDEX SO THAT IT WILL
8892 074100 006300          ASL      RO          ;WORK FOR THE ERROR TABLE
8893 074102 006300          ASL      RO
8894 074104 006300          ASL      RO
8895 074106 062700 001226    ADD      SERRTB,RO  ;FORM TABLE POINTER
8896 074112 012037 074122    MOV      (RO)+,2$  ;PICKUP "ERROR MESSAGE" POINTER
8897 074116 001404          BEQ      3$         ;SKIP TYPEOUT IF NO POINTER
8898 074120 104401          TYPE     "ERROR MESSAGE"
8899 074122 000000 2$:     .WORD     0          ;TYPE THE "ERROR MESSAGE"
8900 074124 104401          TYPE     $CRLF      ;"ERROR MESSAGE" POINTER GOES HERE
8901 074130 012037 074140 3$:     MOV      (RO)+,4$ ;"CARRIAGE RETURN" & "LINE FEED"
8902 074134 001404          BEQ      5$         ;PICKUP "DATA HEADER" POINTER
8903 074136 104401          TYPE     "DATA HEADER" ;SKIP TYPEOUT IF 0
8904 074140 000000 4$:     .WORD     0          ;TYPE THE "DATA HEADER"
8905 074142 104401          TYPE     $CRLF      ;"DATA HEADER" POINTER GOES HERE
8906 074146 011000 5$:     MOV      (RO),RO    ;"CARRIAGE RETURN" & "LINE FEED"
8907 074150 001004          BNE      7$         ;PICKUP "DATA TABLE" POINTER
8908 074152 012600 6$:     MOV      (SP)+,RO    ;GO TYPE THE DATA
8909 074154 104401 001223    TYPE     $CRLF      ;RESTORE RO
8910 074160 000207          RTS      PC         ;"CARRIAGE RETURN" & "LINE FEED"
8911 074162          ;RETURN
8912 074162 013046 7$:     MOV      2(RO)+,-(SP) ;SAVE 2(RO)+ FOR TYPEOUT
8913 074164 104402          TYP0C     6$         ;GO TYPE--OCTAL ASCII(ALL DIGITS)
8914 074166 005710          TST      (RO)       ;IS THERE ANOTHER NUMBER?
8915 074170 001770          BEQ      6$         ;BR IF NO
8916 074172 104401 074200    TYPE     2$       ;TYPE TWO(2) SPACES
8917 074176 000771          BR       7$         ;LOOP
8918 074200 020040 000      8$:     .ASCIZ  "/ /" ;TWO(2) SPACES
8919 074204          .EVEN

```

.SBTTL ERROR HANDLER ROUTINE

```

*****
*THIS ROUTINE WILL INCREMENT THE ERROR FLAG AND THE ERROR COUNT.
*SAVE THE ERROR ITEM NUMBER AND THE ADDRESS OF THE ERROR CALL
*AND GO TO TSTNMB ON ERROR
*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
*SW15=1      HALT ON ERROR
*SW13=1      INHIBIT ERROR TYPEOUTS
*SW10=1      BELL ON ERROR
*SW09=1      LOOP ON ERROR
*CALL
*      ERROR  N      ;;ERROR=EMT AND N=ERROR ITEM NUMBER

```

074204	105237	001103	75:	INCB	SERFLG	;;SET THE ERROR FLAG
074204	001775			BEQ	75	;;DO NOT LET THE FLAG GO TO ZERO
074210	013777	001102 104722		MOV	\$TSTNM, \$DISPLAY	;;DISPLAY EST NUMBER AND ERROR FLAG
074212	032777	002000 104712		BIT	\$BIT10, \$SWR	;;BELL ON ERROR?
074220	001402			BEQ	15	;;NO - SKIP
074226	104401	001216		TYPE	\$BELL	;;RING BELL
074230	005237	001112	15:	INC	\$ERTTL	;;COUNT THE NUMBER OF ERRORS
074234	011637	001116		MOV	(SP), \$ERRPC	;;GET ADDRESS OF ERROR INSTRUCTION
074240	162737	000002 001116		SUB	\$2, \$ERRPC	
074244	117737	104640 001114		MOVB	\$ERRPC, \$ITEMB	;;STRIP AND SAVE THE ERROR ITEM CODE
074252	032777	020000 104652		BIT	\$BIT13, \$SWR	;;SKIP TYPEOUT IF SET
074260	001004			BNE	205	;;SKIP TYPEOUTS
074266	004737	050024		JSR	\$PC, TSTNMB	;;GO TO USER ERROR ROUTINE
074270	104401	001223		TYPE	\$CRLF	
074274			205:			
074300	005777	104634	25:	TST	\$SWR	;;HALT ON ERROR
074300	100001			BPL	35	;;SKIP IF CONTINUE
074304	000000			HALT		;;HALT ON ERROR!
074306	032777	001000 104622	35:	BIT	\$BIT09, \$SWR	;;LOOP ON ERROR SWITCH SET?
074310	001402			BEQ	45	;;BR IF NO
074316	013716	001110		MOV	\$LPERA, (SP)	;;FUDGE RETURN FOR LOOPING
074320	005737	001214	45:	TST	\$ESCAPE	;;CHECK FOR AN ESCAPE ADDRESS
074324	001402			BEQ	55	;;BR IF NONE
074330	013716	001214		MOV	\$ESCAPE, (SP)	;;FUDGE RETURN ADDRESS FOR ESCAPE
074332			55:			
074336	000002			RTI		;;RETURN

.SBTTL TTY INPUT ROUTINE

```

*****
:ENABL LSB

```

```

:DSABL LSB

```

```

*****
:THIS ROUTINE WILL INPUT A SINGLE CHARACTER FROM THE TTY

```

```

:CALL:

```

```

:      ROCHR
:      RETURN HERE

```

```

:      INPUT A SINGLE CHARACTER FROM THE TTY
:      CHARACTER IS ON THE STACK
:      WITH PARITY BIT STRIPPED OFF

```

8977	074340	011646			\$ROCHR: MOV	(SP), -(SP)	;; PUSH DOWN THE PC
8978	074342	016666	000004	000002	MOV	4(SP), 2(SP)	;; SAVE THE PS
8979	074350	105777	104570		1\$: TSTB	2\$TKS	;; WAIT FOR
8980	074354	100375			BPL	1\$	;; A CHARACTER
8981	074356	117766	104564	000004	MOVB	2\$TKB, 4(SP)	;; READ THE TTY
8982	074364	042766	177600	000004	BIC	#177, 4(SP)	;; GET RID OF JUNK IF ANY
8983	074372	026627	000004	000023	CMP	4(SP), #23	;; IS IT A CONTROL-S?
8984	074400	001013			BNE	3\$	;; BRANCH IF NO
8985	074402	105777	104536		2\$: TSTB	2\$TKS	;; WAIT FOR A CHARACTER
8986	074406	100375			BPL	2\$	;; LOOP UNTIL ITS THERE
8987	074410	117746	104532		MOVB	2\$TKB, -(SP)	;; GET CHARACTER
8988	074414	042716	177600		BIC	#177, (SP)	;; MAKE IT 7-BIT ASCII
8989	074420	022627	000021		CMP	(SP)+, #21	;; IS IT A CONTROL-Q?
8990	074424	001366			BNE	2\$	;; IF NOT DISCARD IT
8991	074426	000750			BR	1\$	;; YES, RESUME
8992	074430	026627	000004	000140	3\$: CMP	4(SP), #140	;; IS IT UPPER CASE?
8993	074436	002407			BLT	4\$	;; BRANCH IF YES
8994	074440	026627	000004	000175	CMP	4(SP), #175	;; IS IT A SPECIAL CHAR?
8995	074446	003003			BGT	4\$	;; BRANCH IF YES
8996	074450	042766	000040	000004	BIC	#40, 4(SP)	;; MAKE IT UPPER CASE
8997	074456	000002			4\$: RTI		;; GO BACK TO USER
8998					*****		
8999					:THIS ROUTINE WILL INPUT A STRING FROM THE TTY		
9000					:CALL:		
9001					: ROLIN		
9002					: RETURN HERE		
9003					: INPUT A STRING FROM THE TTY		
9004					: ADDRESS OF FIRST CHARACTER WILL BE ON THE STACK		
9005					: TERMINATOR WILL BE A BYTE OF ALL 0'S		
9005	074460	010346			\$ROLIN: MOV	R3, -(SP)	;; SAVE R3
9006	074462	012703	074566		1\$: MOV	#TTYIN, R3	;; GET ADDRESS
9007	074466	022703	074576		2\$: CMP	#TTYIN+8, R3	;; BUFFER FULL?
9008	074472	101405			BLOS	4\$	;; BR IF YES
9009	074474	104406			ROCHR		;; GO READ ONE CHARACTER FROM THE TTY
9010	074476	112613			MOVB	(SP)+, (R3)	;; GET CHARACTER
9011	074500	122713	000177		10\$: CMPB	#177, (R3)	;; IS IT A RUBOUT
9012	074504	001003			BNE	3\$	;; SKIP IF NOT
9013	074506	104401	001222		4\$: TYPE	\$QUES	;; TYPE A '?'
9014	074512	000763			BR	1\$	;; CLEAR THE BUFFER AND LOOP
9015	074514	111337	074564		3\$: MOVB	(R3), 9\$	;; ECHO THE CHARACTER
9016	074520	104401	074564		TYPE	, 9\$	

D14

MASSBUS RMTD AND RMT1 DIAGNOSTIC
DZRMBC.P11 TTY INPUT ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 173

9017	074524	122723	000015			CMPB	#15,(R3)+	::CHECK FOR RETURN
9018	074530	001356				BNE	2\$	::LOOP IF NOT RETURN
9019	074532	105363	177777			CLAB	-1(R3)	::CLEAR RETURN (THE 15)
9020	074536	104401	001224			TYPE	\$LF	::TYPE A LINE FEED
9021	074542	012603				MOV	(SP)+,R3	::RESTORE R3
9022	074544	011646				MOV	(SP),-(SP)	::ADJUST THE STACK AND PUT ADDRESS OF THE
9023	074546	016666	000004	000002		MOV	4(SP),2(SP)	::FIRST ASCII CHARACTER ON IT
9024	074554	012766	074566	000004		MOV	*TTYIN,4(SP)	
9025	074562	000002				RTI		::RETURN
9026	074564	000			9\$:	.BYTE	0	::STORAGE FOR ASCII CHAR. TO TYPE
9027	074565	000				.BYTE	0	::TERMINATOR
9028	074566	000010				STTYIN:	.BLKB	8.
9029	074576	052536	005015	000		\$CNTLU:	.ASCIZ	/U/<15><12>
9030	074603	136	006507	000012		\$CNTLG:	.ASCIZ	/G/<15><12>
9031	074610	005015	053523	020122		\$MSWR:	.ASCIZ	<15><12>/SWR = /
9032	074616	020075	000					
9033	074621	040	047040	053505		\$MNEW:	.ASCIZ	/ NEW = /
9034	074626	036440	000040					

E14

MASSBUS RMTD AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 174
 DZRHBC.F11 READ AN OCTAL NUMBER FROM THE TTY

9035					.SBTTL READ AN OCTAL NUMBER FROM THE TTY	
9036					::*****	
9037					::*THIS ROUTINE WILL READ AN OCTAL (ASCII) NUMBER FROM THE TTY AND	
9038					::*CHANGE IT TO BINARY.	
9039					::*CALL:	
9040					::*	::READ AN OCTAL NUMBER
9041					::* RDOCT	::LOW ORDER BITS ARE ON TOP OF THE STACK
9042					::* RETURN HERE	::HIGH ORDER BITS ARE IN \$HIOCT
9043					::*	
9044						
9045	074632	011646			\$RDOCT: MOV (SP),-(SP)	::PROVIDE SPACE FOR THE
9046	074634	016666	000004	000002	MOV 4(SP),2(SP)	::INPUT NUMBER
9047	074642	010046			MOV R0,-(SP)	::PUSH R0 ON STACK
9048	074644	010146			MOV R1,-(SP)	::PUSH R1 ON STACK
9049	074646	010246			MOV R2,-(SP)	::PUSH R2 ON STACK
9050	074650	104407			1\$: RDLIN	::READ AN ASCII LINE
9051	074652	012600			MOV (SP)+,R0	::GET ADDRESS OF 1ST CHARACTER
9052	074654	005001			CLR R1	::CLEAR DATA WORD
9053	074656	005002			CLR R2	
9054	074660	112046			2\$: MOVB (R0)+,-(SP)	::PICKUP THIS CHARACTER
9055	074662	001412			BEQ 3\$	::IF ZERO GET OUT
9056	074664	006301			ASL R1	::*2
9057	074666	006102			ROL R2	
9058	074670	006301			ASL R1	::*4
9059	074672	006102			ROL R2	
9060	074674	006301			ASL R1	::*8
9061	074676	006102			ROL R2	
9062	074700	042716	177770		BIC #1C7,(SP)	::STRIP THE ASCII JUNK
9063	074704	062601			ADD (SP)+,R1	::ADD IN THIS DIGIT
9064	074706	000764			BR 2\$	::LOOP
9065	074710	005726			3\$: TST (SP)+	::CLEAN TERMINATOR FROM STACK
9066	074712	010166	000012		MOV R1,12(SP)	::SAVE THE RESULT
9067	074716	010237	074732		MOV R2,\$HIOCT	
9068	074722	012602			MOV (SP)+,R2	::POP STACK INTO R2
9069	074724	012601			MOV (SP)+,R1	::POP STACK INTO R1
9070	074726	012600			MOV (SP)+,R0	::POP STACK INTO R0
9071	074730	000002			RTI	::RETURN
9072	074732	000000			\$HIOCT: .WORD 0	::HIGH ORDER BITS GO HERE

.SBTTL TRAP DECODER

```

*****
*THIS ROUTINE WILL PICKUP THE LOWER BYTE OF THE "TRAP" INSTRUCTION
*AND USE IT TO INDEX THROUGH THE TRAP TABLE FOR THE STARTING ADDRESS
*OF THE DESIRED ROUTINE. THEN USING THE ADDRESS OBTAINED IT WILL
*GO TO THAT ROUTINE.

```

```

$TRAP:  MOV    RO, -(SP)      ;;SAVE RO
        MOV    2(SP), RO     ;;GET TRAP ADDRESS
        TST    -(RO)         ;;BACKUP BY 2
        MOVB   (RO), RO      ;;GET RIGHT BYTE OF TRAP
        ASL    RC            ;;POSITION FOR INDEXING
        MOV    $TRAPD(RO), RO ;;INDEX TO TABLE
        RTS    RO            ;;GO TO ROUTINE

```

```

;;THIS IS USE TO HANDLE THE "GETPRI" MACRO

```

```

$TRAP2: MOV    (SP), -(SP)    ;;MOVE THE PC DOWN
        MOV    4(SP), 2(SP)   ;;MOVE THE PSW DOWN
        RTI                      ;;RESTORE THE PSW

```

.SBTTL TRAP TABLE

```

*THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
*BY THE "TRAP" INSTRUCTION.

```

	ROUTINE	
\$TRAPD:	WORD \$TRAP2	
\$TYPE	;;CALL=TYPE	TRAP+1(104401) TTY TYPEOUT ROUTINE
\$TYPOC	;;CALL=TYPOC	TRAP+2(104402) TYPE OCTAL NUMBER (WITH LEADING ZEROS)
\$TYPOS	;;CALL=TYPOS	TRAP+3(104403) TYPE OCTAL NUMBER (NO LEADING ZEROS)
\$TYPON	;;CALL=TYPON	TRAP+4(104404) TYPE OCTAL NUMBER (AS PER LAST CALL)
\$TYPDS	;;CALL=TYPDS	TRAP+5(104405) TYPE DECIMAL NUMBER (WITH SIGN)
\$RDCHR	;;CALL=RDCHR	TRAP+6(104406) TTY TYPEIN CHARACTER ROUTINE
\$RDLIN	;;CALL=RDLIN	TRAP+7(104407) TTY TYPEIN STRING ROUTINE
\$RDOCT	;;CALL=RDOCT	TRAP+10(104410) READ AN OCTAL NUMBER FROM TTY

.END

```

9073
9074
9075
9076
9077
9078
9079
9080
9081 074734 010046
9082 074736 016600 000002
9083 074742 005740
9084 074744 111000
9085 074746 006300
9086 074750 016000 074770
9087 074754 000200
9088
9089
9090
9091
9092 074756 011646
9093 074760 016666 000004 000002
9094 074766 000002
9095
9096
9097
9098
9099
9100
9101
9102
9103 074770 074756
9104 074772 073156
9105 074774 073422
9106 074776 073376
9107 075000 073436
9108 075002 073624
9109
9110
9111 075004 074340
9112 075006 074460
9113 075010 074632
9114 000001

```

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 177
DZRHBC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

AB	=	052525	1654#	2497	2638	2770	3145	5394	5672	5950	6228						
ABLE		013436	2718	2723	2725	2727#											
ADDER		006350	1992	1999	2002	2005#											
ADD1		003320	1593#	1860													
ADD2		003322	1594#	1862	1863												
ADD3		003324	1595#	1865	1866												
ADD4		003326	1596#	1868	1869												
AD1ERR		005100	1838	1860#													
AD2ERR		005200	1861	1872#													
AD3ERR		005220	1864	1876#													
AD4ERR		005240	1867	1680#													
AHEAD		045772	6470	6473#													
ALRIGHT		012242	2554	2556#													
APE	=	100000	1511#	2072	3056	3091	3176	3213	3284	3319	3375	3483	3519	3589	3624		
			3693	3795	3897												
AROUND		004560	1904	1813#													
AS		003412	1635#	2368#	8432												
ATA	=	100000	1540#	2096	6355												
ATO	=	000001	1570#														
AT1	=	000002	1571#														
AT2	=	000004	1572#														
AT3	=	000010	1573#														
AT4	=	000020	1574#														
AT5	=	000040	1575#														
AT6	=	000100	1576#														
AT7	=	000200	1577#														
A16	=	000400	1524#	2946	3004	3040	3055	3177	3283	3374	3492	3588	3692	3794	3896		
			6691														
A17	=	001000	1525#	2979	3040	3055	3177	3283	3374	3482	3588	3692	3794	3896	6691		
BA		003414	1636#	2174#	2221#	2261#	2308#	2444#	2479#	2506#	2530#	2579#	2613#	2616	2619#		
			2641#	2644	2647#	2664#	2667	2671#	2730#	2786#	2925#	2880#	2964#	3060#	3182#		
			3298#	3379#	3487#	3593#	3697#	3799#	3901#	3997#	4062#	4111#	4161#	4211#	4266#		
			4319#	4372#	4425#	4478#	4531#	4584#	4637#	4690#	4743#	4796#	4849#	4902#	4957#		
			4992#	5054#	5089#	5154#	5212#	5287#	5351#	5426#	5490#	5565#	5629#	5704#	5768#		
			5843#	5907#	5982#	6046#	6121#	6185#	6260#	6342#	6418	6436	6438	6440	6446		
			8455														
BAE		003416	1637#	2177#	2180#	2224#	2227#	2264#									

BEGIN1	004176
BEGIN2	004166
BEGIN3	004152
BEHIND	045746
BITCNT	003446

449	1760*
1757*	6532
453	1753*
6468*	6472
1706*	2294*
2721*	2724*
2974*	2950*
3163*	3166*
3578*	3580*
3888*	3891*
4105*	4147*
4305*	4308*
4467*	4469*
4628*	4631*
4790*	4835*
4978*	4981*
5143*	5145*
5281*	5337*
5479*	5481*
5623*	5681*
5821*	5822
5968*	5971*
6112*	6115*
6323*	6326*
6672*	6674*
2297*	2299*
2772*	2775*
2953*	2955*
3168*	3171*
3583*	3679*
3983*	3986*
4150*	4152*
4310*	4313*
4472*	4517*
4676*	4679*
4838*	4840*
4983*	4986*
5148*	5198*
5337*	5340*
5481*	5484*
5681*	5682*
5822	5829*
5971*	5973*
6115*	6171*
6326*	6328*
6674*	6677*
2302*	2325*
2777*	2780*
2958*	3041*
3270*	3273*
3682*	3684*
3988*	3991*
4155*	4197*
4358*	4361*
4520*	4522*
4681*	4684*
4843*	4888*
5040*	5043*
5201*	5203*
5345*	5403*
5548*	5543*
5683	5690*
5832*	5834*
5976*	6032*
6174*	6176*
6331*	6546*
2328*	2330*
2810*	2813*
3044*	3046*
3275*	3278*
3687*	3781*
4048*	4051*
4200*	4202*
4363*	4366*
4525*	4570*
4729*	4732*
4891*	4893*
5045*	5048*
5206*	5264*
5404*	5405
5551*	5554*
5695*	5698*
5893*	5896*
6037*	6040*
6237*	6238*
6559	6561*
2333*	2338*
2815*	2818*
3049*	3147*
3469*	3472*
3784*	3786*
4053*	4056*
4205*	4252*
4411*	4414*
4573*	4575*
4734*	4737*
4896*	4943*
5075*	5078*
5265*	5266
5412*	5415*
5556*	5559*
5754*	5757*
5898*	5901*
6098*	6099*
6239	6246*
6574	6576*
2341*	2716*
2866*	2969*
3150*	3152*
3474*	3477*
3789*	3883*
4097*	4100*
4255*	4257*
4416*	4419*
4578*	4623*
4782*	4785*
4946*	4948*
5080*	5083*
5273*	5276*
5417*	5420*
5615*	5618*
5759*	5762*
5959*	5960*
6100	6107*
6249*	6251*
6581	6585
2719*	2871*
3155*	3155*
3575*	3575*
3886*	3886*
4102*	4102*
4260*	4260*
4464*	4464*
4626*	4626*
4787*	4787*
4951*	4951*
5140*	5140*
5278*	5278*
5476*	5476*
5620*	5620*
5820*	5820*
5961	5961
6110*	6110*
6254*	6254*
6669*	6669*

```

BIT0   = 000001
BIT00  = 000001
BIT01  = 000002
BIT02  = 000004
BIT03  = 000010
BIT04  = 000020
BIT05  = 000040
BIT06  = 000100
BIT07  = 000200
BIT08  = 000400
BIT09  = 001000
BIT1   = 000002
BIT10  = 002000
BIT11  = 004000
BIT12  = 010000
BIT13  = 020000
BIT14  = 040000
BIT15  = 100000
BIT2   = 000004
BIT3   = 000010
BIT4   = 000020
BIT5   = 000040
BIT6   = 000100
BIT7   = 000200
BIT8   = 000400
BIT9   = 001000
BLIP   = 044470
BLITZ  = 044400
BLKTS  = 050254
BLO    = 000040
BL1    = 000100

```

6314	6316	6321*
6305*	6386	
6311	6769*	
1587*		
1588*		
424*	6544	
414*	424	
413*	423	
412*	422	
411*	421	
410*	420	
409*	419	
408*	418	
407*	417	
406*	416	8583
405*	415	8591
423*	6317	8953
404*	8938	
403*	8598	
402*		
401*	8945	
400*	8569	
399*		
422*		
421*		
420*		
419*		
418*		
417*		
416*	6542	
415*		

[illegible]

J14

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 180
 DZRHEC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

DEVONT	003376	1618*	6398*	6399	6401	6404	6407	6422*	6483					
DEVIC1	003366	1613*	1845*	1860*	1887	1896*	1899	1902	1905	1969	1975	2356	6417	6419
		6424	6429											
DEVIC2	003370	1614*	1863*	1872*	1917*	1920	1923	1926	6433	6435	6441			
DEVIC3	003372	1615*	1866*	1876*	1938*	1941	1944	1947	6444	6446	6452			
DEVIC4	003374	1616*	1869*	1880*	1959*	1962	1966	6455	6457	6463				
DEVIC5	003400	1619*	1905*	1926*	1947*	1966*	1969*	1977	1984	6419*	6424*	6435*	6446*	6457*
		6466	6473											
DF1	072234	580	1062	1085	8462*									
DF105	072310	1100	1105	1121	1126	1132	1280	8482*						
DF11	072260	630	815	1160	8472*									
DF132	072315	1217	1223	1229	1234	1239	1244	8484*						
DF170	072323	1384	8486*											
DF172	072326	1015	8487*											
DF2	072240	587	1068	1073	8464*									
DF3	072244	593	8466*											
DF34	072263	807	8473*											
DF35	072266	833	842	8474*										
DF36	072267	824	1207	8475*										
DF4	072250	599	8468*											
DF41	072272	852	1428	1433	1438	1443	1448	1453	1458	8476*				
DFS	072254	605	612	617	623	637	647	655	664	675	687	694	704	713
		723	730	740	753	760	768	778	786	797	8470*			
DF52	072274	921	8477*											
DF71	072301	1025	1034	1042	1050	8479*								
DF76	072304	1056	1154	1166	1171	1259	1274	1286	1291	1296	1302	1418	1423	8480*
DH1	067522	578	1060	1083	8208*									
DH105	071106	1098	1103	8345*										
DH11	070330	628	1158	8277*										
DH111	071153	1119	1124	1130	8352*									
DH121	071220	1164	1169	1416	1421	8359*								
DH130	071256	1205	1210	8364*										
DH132	071304	1215	1221	1227	1232	1237	1242	8368*						
DH142	071362	1257	1272	8376*										
DH146	071420	1278	8381*											
DH147	071465	1152	1284	1289	1294	1300	8388*							
DH170	071523	1382	8394*											
DH171	071551	813	8398*											
DH172	071577	1011	8402*											
DH2	067642	585	1066	1071	8222*									
DH3	067763	591	8236*											
DH34	070416	803	8287*											
DH35	070473	829	840	8295*										
DH36	070476	820	1212	8296*										
DH4	070103	597	8250*											
DH41	070557	848	1426	1431	1436	1441	1446	1451	1456	8306*				
DH5	070223	603	610	615	621	635	645	653	662	673	685	692	702	711
		721	728	738	751	758	766	776	784	795	8264*			
DH52	070603	917	8310*											
DH71	070702	8322*												
DH72	070761	1021	1031	1040	1048	8330*								
DH76	071050	1054	8340*											
DISPLA	001142	529*	1792*	1800*	8612*	8937*								
DISPRE	000174	446*	1800											
DLT =	100000	1497*	2088	3090	3212	3318	3409	3517	3623	3727	3829	3931	4019	6711
DMD =	000001	1554*	5256	5263	5268	5269	5270	5271	5395	5402	5407	5408	5409	5410

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 181
DZRHBC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

[illegible]

L14

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 182
 DZRHBC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

EM10	055527	619	7273*
EM100	060663	1064	7571*
EM101	060750	1070	7581*
EM102	061015	1075	7589*
EM103	061046	1080	7594*
EM104	061224	1087	7613*
EM105	061415	1095	7634*
EM106	061462	1102	7641*
EM107	061510	1107	7645*
EM11	055563	625	7278*
EM110	061617	1112	7657*
EM111	061711	1118	7667*
EM112	061764	1123	7675*
EM113	062011	1128	7679*
EM114	062106	1134	7690*
EM115	062204	1140	7701*
EM116	062316	1145	7714*
EM117	062350	1150	7719*
EM12	055624	632	7284*
EM120	062446	1156	7730*
EM121	062507	1162	7736*
EM122	062572	1168	7746*
EM123	062624	1173	7751*
EM124	062677	1180	7759*
EM125	062772	1186	7770*
EM126	063066	1192	7781*
EM127	063157	1198	7791*
EM13	055644	640	7287*
EM130	063255	1204	7802*
EM131	063327	1209	7810*
EM132	063361	1214	7815*
EM133	063415	1219	7820*
EM134	063516	1225	7832*
EM135	063577	1231	7841*
EM136	063633	1236	7846*
EM137	063714	1241	7855*
EM14	055713	650	7294*
EM140	064015	1246	7867*
EM141	064072	1251	7875*
EM142	064146	1256	7883*
EM143	064220	1261	7890*
EM144	064274	1266	7898*
EM145	064362	1271	7908*
EM146	064427	1276	7915*
EM147	064500	1282	7922*
EM15	055737	658	7298*
EM150	064571	1288	7932*
EM151	064723	1293	7948*
EM152	065025	1298	7960*
EM153	065075	1304	7967*
EM154	065161	1310	7977*
EM155	065252	1316	7987*
EM156	065340	1322	7997*
EM157	065431	1328	8008*
EM16	055763	667	7302*
EM160	065525	1334	8019*

M14

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 183
 DZRHBC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

EM161	065614	1340	8029#
EM162	065703	1346	8039#
EM163	065772	1351	8050#
EM164	066050	1357	8059#
EM165	066137	1363	8069#
EM166	066235	1369	8081#
EM167	066314	1375	8090#
EM17	056003	677	7305#
EM171	066413	1386	8101#
EM172	066465	1393	8109#
EM173	066506	1399	8112#
EM174	066572	1405	8121#
EM175	066623	1410	8126#
EM176	066663	1415	8132#
EM177	066716	1420	8137#
EM2	055020	582	7214#
EM20	056052	690	7312#
EM200	066763	1425	8144#
EM201	067045	1430	8153#
EM202	067127	1435	8162#
EM203	067211	1440	8171#
EM204	067271	1445	8180#
EM205	067356	1450	8189#
EM206	067442	1455	8198#
EM207	067466	1460	8203#
EM21	056103	697	7317#
EM22	056132	707	7321#
EM23	056165	716	7326#
EM24	056204	726	7329#
EM25	056235	733	7334#
EM26	056267	743	7339#
EM27	056315	756	7343#
EM3	055060	589	7220#
EM30	056350	763	7348#
EM31	056405	771	7353#
EM32	056444	781	7359#
EM33	056473	789	7363#
EM34	056543	800	7370#
EM35	056613	810	7377#
EM36	056645	818	7382#
EM37	056703	827	7388#
EM4	055134	595	7228#
EM40	056734	836	7393#
EM41	057074	845	7409#
EM42	057177	856	7421#
EM43	057250	864	7428#
EM44	057314	870	7434#
EM45	057406	878	7444#
EM46	057461	885	7452#
EM47	057542	892	7461#
EM5	055174	601	7234#
EM50	057613	899	7468#
EM51	057672	906	7476#
EM52	057723	912	7481#
EM53	060076	924	7501#
EM54	060104	930	7502#

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CROSS REFERENCE TABLE -- USER SYMBOLS

6280	6283	8449																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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HE024	051342	6881#	8511
HE025	051404	6887#	8512
HE026	051446	6893#	8513
HE027	051510	6899#	8514
HE03	050347	6785#	8494
HE030	051552	6905#	8515
HE031	051614	6911#	8516
HE032	051661	6918#	8517
HE033	051741	6927#	8518
HE034	052016	6935#	8519
HE035	052073	6943#	8520
HE036	052151	6951#	8521
HE037	052225	6959#	8522
HE04	050406	6791#	8495
HE040	052317	6969#	8523
HE041	052404	6978#	8524
HE042	052450	6984#	8525
HE043	052521	6991#	8526
HE044	052577	6999#	8527
HE045	052666	7009#	8528
HE046	052731	7015#	8529
HE047	053016	7024#	8530
HE05	050445	6797#	8496
HE050	053075	7032#	8531
HE051	053162	7041#	8532
HE052	053241	7049#	8533
HE053	053320	7057#	8534
HE054	053364	7063#	8535
HE055	053430	7069#	8536
HE056	053467	7075#	8537
HE057	053543	7083#	8538
HE06	050476	6802#	8497
HE060	053612	7090#	8539
HE061	053665	7098#	8540
HE062	053733	7105#	8541
HE063	054006	7113#	8542
HE064	054055	7120#	8543
HE065	054130	7128#	8544
HE066	054176	7135#	8545
HE067	054252	7143#	8546
HE07	050530	6807#	8498
HE070	054321	7150#	8547
HE071	054375	7158#	8548
HE072	054443	7165#	8549
HE073	054517	7173#	8550
HE074	054566	7180#	8551
HE075	054642	7188#	8552
HE076	054710	7195#	8553
HERADD=	177742	1625#	6645
HERE	007336	2171#	2197
HIBYTE	012210	2548	2550#
HT =	000011	337#	8698
HURTS	010472	2322	2324#
ICPA =	000010	1557#	3980
IDPA =	000020	1558#	
IE =	000100	1522#	3055

8729
 3177 3283 3374 3482 3588 3692 3794 3896 5135 5136 6321

[illegible]

E15

MASSBUS RHTD AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 188
 DZRMBC.F11 CROSS REFERENCE TABLE -- USER SYMBOLS

MPE = 000400	1490*	2088	3090	3212	3305	3354	3409	3517	3623	3727	3829	3931	4019
MPETST 024334	6711												
MXF = 001000	4011	4014*											
	1491*	2088	3090	3212	3318	3409	3517	3623	3714	3763	3829	3882	3984
	3884	3918	3967	4019	6711								
MYSTIC 014246	2822*												
NEBL = 000100	1560*												
NED = 010000	1494*	2088	3090	3212	3318	3409	3517	3610	3659	3727	3829	3931	4019
	6711												
NEDERR 021256	3570	3572*											
NEM = 004000	1493*	2088	3077	3126	3212	3318	3409	3517	3623	3727	3829	3931	4019
	6711												
NEXTST 046504	6551	6560	6563*										
NOOP = 000001	1663*												
OAB = 125252	1655*	2520	2662	2808	3161	5193	5255	5332	5471	5533	5610	5748	5811
	5887	6026	6089	6165									
OABTST 014246	2812	2817	2819	2821*									
ODDAO 004002	1722*	4407	4513	4566	4672	4778	5038	5071*	5307	5446	5585	5724	5863
	6002												
OFFSET 003456	1715*	6730*	6731*	6733									
OFF11 003402	1623*	1977*	1979	1980*	1984*	1985*	1986	1987*	1988	6466*	6468	6471*	6473*
	6474*	6475	6476*	6477									
ONE = 000001	1657*	2471	2639	2714	2759	2766	6556	6571					
OPI = 020000	1550*	2103	3093	3730	3832								
OR = 000200	1489*	2295	2300	2321	2326	2331	2339	2343	2747	2773	2778	2799	2811
	2816	2838	6696	6711									
ORSET 013610	2748	2751*											
OUTOF 050252	6747	6749	6762*										
PARITY 047120	1825	6619*											
PASS 003452	1708*	6304*	6315	6383	6385*								
PAT = 000020	1486*	3268	3674	6696	6711								
PC = 000007	358*	6501*	6504*	6526*	6531	6684*	8697*	8704*	8711*	8725*	8727*	8910*	8947*
PGE = 002000	1492*	2088	3090	3212	3318	3409	3517	3623	3727	3816	3865	3931	4019
	6711												
PGETST 022676	3783	3788	3790	3792*									
PIP = 020000	1538*	6706											
PIRQ = 177772	344*												
PIRQVE = 000240	438*												
PLACE 020464	3462	3464*											
PRIBIT 046656	6557	6594*											
PRTBIT 046646	6572	6580*											
PRO = 000000	361*												
PR1 = 000040	362*												
PR2 = 000100	363*												
PR3 = 000140	364*												
PR4 = 000200	365*												
PR5 = 000240	366*												
PR6 = 000300	367*												
PR7 = 000340	368*												
PS = 177776	341*	342	5133*										
PSEL = 002000	1526*	3055	3177	3283	3374	3482	3588	3692	3794	3896	6371	6668	6691
PSW = 177776	342*	6303*											
PWRVEC = 000024	433*	1780*	1781*	8620*	8621*	8630*	8636*	8648*	8649*				
RBUF 004100	1724*	2111*	2116*	2121*	2126*	2133*	2138*	3266	3676	5191	5192*	5230	5232
	5330	5331*	5369	5371	5469	5470*	5508	5510	5608	5609*	5647	5649	5747
	5748*	5786	5886	5887*	5925	6025	6026*	6064	6164	6165*	6203	6628*	6629*

		2631	2863*	2886	2941*	2970	2982	2984	2986	3037*	3066	3143*	3198	3265*
		3294	3385	3466*	3493	3571*	3599	3703	3778*	3805	3907	4003	4045*	4068
		4117	4167	4217	4249*	4272	4302*	4325	4355*	4378	4408*	4431	4461*	4484
		4514*	4537	4567*	4590	4620*	4643	4673*	4696	4726*	4749	4779*	4802	4832*
		4855	4885*	4908	4939*	4963	4998	5060	5095	5131*	5160	5196*	5218	5260*
		5293	5335*	5357	5399*	5432	5474*	5496	5538*	5571	5613*	5635	5677*	5710
		5752*	5774	5816*	5849	5891*	5913	5955*	5988	6030*	6052	6094*	6127	6169*
		6191	6233*	6266	6308*	6348	6469	6475*						
RHCS1	003330	1597*	1978	1989	1994	2078	2081	2116	2172	2219	2259	2306	2371	2442
		2477	2504	2528	2577	2617	2645	2669	2717	2722	2728	2743	2794	2823
		2865*	2867	2872	2878	2893	2946*	2948*	2951	2956	2962	2979	3004	3040*
		3042	3047	3054	3058	3073	3146*	3148	3153	3162*	3164	3169	3176	3180
		3195	3267*	3271	3276	3282	3286	3301	3373	3377	3392	3468*	3470	3475
		3481	3485	3500	3574*	3576	3581	3587	3591	3606	3678*	3680	3685	3691
		3695	3710	3779*	3780*	3782	3787	3793	3797	3812	3895	3899	3914	3984
		3989	3995	4010	4014	4016	4047*	4049	4054	4060	4075	4096*	4098	4103
		4109	4124	4146*	4148	4153	4159	4174	4196*	4198	4203	4209	4224	4251*
		4253	4258	4264	4279	4304*	4306	4311	4317	4332	4357*	4359	4364	4370
		4385	4410*	4412	4417	4423	4438	4463*	4465	4470	4476	4491	4516*	4518
		4523	4529	4544	4569*	4571	4576	4582	4597	4622*	4624	4629	4635	4650
		4675*	4677	4682	4688	4703	4728*	4730	4735	4741	4756	4781*	4783	4788
		4794	4809	4834*	4836	4841	4847	4862	4887*	4889	4894	4900	4915	4942*
		4944	4949	4955	4970	4977*	4979	4984	4990	5005	5039*	5041	5046	5052
		5067	5074*	5076	5081	5087	5102	5135*	5136	5141	5146	5152	5167	5197*
		5199	5204	5210	5226	5262*	5274	5279	5285	5301	5336*	5338	5343	5349
		5365	5401*	5413	5418	5424	5440	5475*	5477	5482	5488	5504	5540*	5552
		5557	5563	5579	5614*	5616	5621	5627	5643	5679*	5691	5696	5702	5718
		5753*	5755	5760	5766	5782	5818*	5830	5835	5841	5857	5892*	5894	5899
		5905	5921	5957*	5969	5974	5980	5996	6031*	6033	6038	6044	6060	6096*
		6108	6113	6119	6135	6170*	6172	6177	6183	6199	6235*	6247	6252	6258
		6274	6321*	6324	6329	6335	6340	6357	6371	6467	6478	6668*	6670	6675
		6681	6690	6429										
RHCS1B	003364	1611*	1989*	1990*	3125*	3247*	3353*	3444*	3552*	3658*	3762*	3864*	3966*	6478*
		6479*												
RHCS2	003340	1601*	1993*	2056*	2057*	2085	2088	2111	2121	2152*	2153*	2171*	2182	2218*
		2229	2258*	2269	2295	2300	2316	2321	2326	2331	2337*	2339	2343	2422*
		2423*	2452	2487	2514	2538	2587	2627	2655	2679	2738	2747	2773	2778
		2794	2799	2811	2816	2833	2838	2860*	2888	2972	3039*	3053	3068	3077
		3126	3140*	3175	3190	3199	3248	3261*	3268*	3269	3296	3305	3354	3368*
		3372*	3387	3396	3445	3460*	3495	3504	3553	3568*	3601	3610	3659	3674*
		3705	3714	3763	3774*	3807	3816	3865	3881*	3882*	3884	3889	3909	3918
		3967	3979*	4005	4046*	4070	4119	4169	4219	4250*	4274	4303*	4327	4356*
		4380	4409*	4433	4462*	4486	4515*	4539	4568*	4592	4621*	4645	4674*	4698
		4727*	4751	4780*	4804	4833*	4857	4886*	4910	4938*	4965	5000	5018	5035*
		5062	5097	5115	5127*	5162	5189*	5220	5254*	5295	5328*	5359	5393*	5434
		5467*	5498	5532*	5573	5606*	5637	5671*	5712	5745*	5776	5810*	5851	5884*
		5915	5949*	5990	6023*	6054	6088*	6129	6162*	6193	6227*	6268	6302*	6350
		6695	6710											
RHCS3	003362	1610*	1988*	2014*	2026*	2069	2072	2138	2181	2228	2268	2315	2428*	2429
		2431	2437*	2438	2439	2451	2486	2513	2537	2586	2626	2654	2678	2737
		2793	2832	2887	2971	3031	3056*	3067	3178*	3189	3284*	3295	3375*	3386
		3464*	3483*	3494	3589*	3600	3693*	3704	3795*	3806	3897*	3908	4004	4069
		4079	4118	4128	4168	4178	4218	4228	4273	4283	4326	4336	4379	4389
		4432	4442	4485	4495	4538	4548	4591	4601	4644	4654	4697	4707	4750
		4760	4803	4813	4856	4866	4909	4919	4964	4999	5009	5015	5061	5096
		5106	5112	5161	5219	5294	5358	5433	5497	5572	5636	5711	5775	5850

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 191
DZRHBC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

		5914	5999	6053	6128	6192	6267	6349	6477*	6715				
RHOB	003352	1606*	2293*	2324	2715*	2749	2751	2771*	2902	2804	2809*	2841		
RHOT	003356	1608*	1995	2154	2358	2374								
RHER	003344	1603*	2100	2103	2126	2184	2231	2271	2318	2454	2489	2516	2540	2589
		2629	2657	2681	2740	2796	2835	2890	2974	3070	3192	3298	3399	3497
		3603	3707	3809	3911	4007	4072	4121	4171	4221	4276	4329	4382	4435
		4488	4541	4594	4647	4700	4753	4806	4859	4912	4967	5002	5064	5099
		5164	5222	5297	5361	5436	5500	5575	5639	5714	5778	5853	5917	5992
		6056	6131	6195	6270	6352	6700							
RHMR1	003354	1607*	3980*	5256*	5263*	5268*	5269*	5270*	5271*	5272*	5395*	5402*	5407*	5408*
		5409*	5410*	5411*	5534*	5541*	5546*	5547*	5548*	5549*	5550*	5673*	5680*	5685*
		5686*	5687*	5688*	5689*	5812*	5819*	5824*	5825*	5826*	5827*	5828*	5951*	5958*
		5963*	5964*	5965*	5966*	5967*	6090*	6097*	6102*	6103*	6104*	6105*	6106*	6229*
		6236*	6241*	6242*	6243*	6244*	6245*							
RHMR2	003336	1600*	1999	2058	2186	2233	2273	2320	2456	2491	2518	2542	2591	2631
		2659	2683	2742	2798	2837	2892	2976	3072	3194	3300	3391	3499	3605
		3709	3811	3913	4009	4074	4123	4173	4223	4278	4331	4384	4437	4490
		4543	4596	4649	4702	4755	4808	4861	4914	4969	5004	5066	5101	5166
		5224	5299	5363	5438	5502	5577	5641	5716	5780	5855	5919	5994	6058
		6133	6197	6272	6354	6379*								
		6320	6339*	6769										
RHINT	044560	1602*	2093	2096	2133	2183	2230	2270	2317	2453	2488	2515	2539	2588
RHST	003342	2628	2656	2680	2739	2795	2834	2889	2973	3069	3191	3297	3388	3496
		3602	3706	3808	3910	4006	4071	4120	4170	4220	4275	4328	4381	4434
		4487	4540	4593	4646	4699	4752	4805	4858	4911	4966	5001	5063	5098
		5163	5221	5296	5360	5435	5499	5574	5638	5713	5777	5852	5916	5991
		6055	6130	6194	6269	6351	6355	6705						
RHTDB	003350	1605*	2185	2232	2272	2319	2455	2490	2517	2541	2590	2630	2658	2682
		2741	2797	2836	2891	2904	2909	2975	3071	3193	3299	3390	3498	3604
		3677*	3708	3810	3912	3981*	3982*	4008	4073	4122	4172	4222	4277	4330
		4383	4436	4489	4542	4595	4648	4701	4754	4807	4860	4913	4968	5003
		5065	5100	5165	5193*	5223	5225	5230	5298	5300	5310	5332*	5362	5364
		5369	5394*	5437	5439	5449	5471*	5501	5503	5508	5576	5578	5588	5610*
		5640	5642	5647	5672*	5715	5717	5727	5749*	5779	5781	5796	5788	5854
		5856	5866	5888*	5918	5920	5925	5927	5950*	5993	5995	6005	6027*	6057
		6059	6064	6066	6132	6134	6144	6166*	6196	6198	6203	6205	6228*	6271
		6273	6283	6353	6363									
		2004	2009*											
RHTEST	006364	1468*												
RHVEC	003316	1598*	2168*	2169	2173	2187	2190	2193	2199	2203	2220	2260	2307	2443
RHWC	003332	2472*	2473	2478	2498*	2499	2500	2505	2521*	2522	2523	2529	2544	2545*
		2547	2551*	2553	2557*	2578	2618	2646	2670	2729	2785	2824	2859*	2879
		2895	2897	2899	2943*	2963	3038*	3059	3139*	3159*	3181	3262*	3287	3378
		3465*	3486	3572*	3592	3675*	3696	3798	3900	3996	4043*	4061	4094*	4110
		4144*	4160	4194*	4210	4247*	4265	4300*	4318	4353*	4371	4406*	4424	4459*
		4477	4512*	4530	4565*	4583	4618*	4636	4671*	4689	4724*	4742	4777*	4795
		4830*	4848	4883*	4901	4941*	4956	4976*	4991	5036*	5053	5073*	5088	5134*
		5153	5190*	5211	5257*	5286	5304	5329*	5350	5396*	5425	5443	5468*	5489
		5535*	5564	5582	5607*	5628	5674*	5703	5721	5746*	5767	5813*	5842	5860
		5885*	5906	5952*	5981	5999	6024*	6045	6091*	6120	6138	6163*	6184	6230*
		6259	6277	6310*	6341	6366								
		2494	2497*											
RHWCA	011610	2472*	2496											
RHWCT	011426	2013	2023	2028	2037*									
RH11	006550	2017*												
RH11BA	006420	2031*												
RH70BA	006514													

SA200 005306

2011	2024											
5010	5015											
6541	6543	6545	6579									
1547	2103	3093	3730	3932								
1544	2103	3093	3730	3832								
6403	6444											
349	1750	1751	1753	1757	1758	1762	1803	1830	1832	6523	6526	8622
8647	8680	8681	8682	8685	8819	8829	8833	8849	8850	8863	8882	8983
8884	8891	8892	8893	8894	8895	8896	8901	8906	8908	8912	8914	9047
9051	9054	9070	9081	9082	9083	9084	9085	9086	9087			
350	1834	2010	2022	2031	2032	2065	2175	2222	2253	2262	2309	2424
2445	2480	2507	2531	2568	2580	2620	2648	2672	2731	2787	2826	2861
2881	2939	2944	2965	2977	3013	3029	3035	3061	3141	3183	3263	3289
3369	3380	3461	3488	3569	3594	3698	3776	3800	3878	3902	3998	4041
4063	4092	4112	4142	4162	4192	4212	4245	4267	4298	4320	4351	4373
4404	4426	4457	4479	4510	4532	4563	4585	4616	4638	4669	4691	4722
4744	4775	4797	4828	4850	4881	4903	4935	4958	4993	5032	5055	5090
5129	5155	5194	5213	5258	5288	5333	5352	5397	5427	5472	5491	5536
5566	5611	5630	5675	5705	5750	5769	5814	5844	5889	5908	5953	5983
6028	6047	6092	6122	6167	6186	6231	6261	6306	6313	6343	6639	8623
8646	8820	8833	8834	8838	8862	9048	9052	9056	9058	9060	9063	9066
9069												
351	1978	1979	1981	6467	6468	6469	8624	8645	8921	8832	8836	8839
8846	8847	8848	8853	8861	9049	9053	9057	9059	9061	9067	9068	
352	2370	2377	2385	8625	8644	8762	8771	8777	8778	8781	8786	8787
8788	8797	8822	8830	8831	8845	8848	8857	8858	8860	9005	9006	9007
9010	9011	9015	9017	9019	9021							
353	2358	2359	2360	2362	2365	2366	2367	8626	8643	8763	8765	8766
8767	8768	8769	8783	8785	8793	8796						
354	8627	8642	8764	8770	8772	8774	8775	8776	8777	8795	8823	8825
8827	8834	8838	8853	8859								
355	1768	1769	1770									
356	2039	2110	2113	2115	2118	2120	2123	2125	2128	2132	2135	2137
2140	2144	2145	2158	2196	2206	2207	2208	2239	2245	2246	2279	2295
2286	2347	2348	2349	2413	2414	2458	2459	2460	2476	2503	2526	2556
2558	2576	2597	2598	2633	2661	2685	2698	2699	2746	2756	2807	2846
2847	2848	2903	2925	2926	2927	2989	2994	2997	3020	3021	3076	3095
3105	3109	3114	3118	3129	3130	3198	3217	3227	3231	3236	3240	3251
3252	3304	3323	3333	3337	3342	3346	3357	3358	3395	3414	3424	3428
3433	3437	3448	3449	3503	3522	3532	3536	3541	3545	3556	3557	3609
3628	3638	3642	3647	3651	3662	3663	3713	3732	3742	3746	3751	3755
3766	3767	3815	3834	3844	3848	3853	3857	3868	3869	3917	3936	3946
3950	3955	3959	3970	3971	4013	4021	4030	4031	4032	4078	4082	4083
4084	4127	4131	4132	4133	4177	4181	4182	4183	4227	4231	4232	4233
4282	4286	4287	4288	4335	4339	4340	4341	4388	4392	4393	4394	4441
4445	4446	4447	4494	4498	4499	4500	4547	4551	4552	4553	4600	4604
4605	4606	4653	4657	4658	4659	4706	4710	4711	4712	4759	4763	4764
4765	4812	4816	4817	4818	4865	4869	4870	4871	4918	4922	4923	4924
4973	5008	5012	5021	5022	5070	5105	5109	5118	5119	5179	5180	5229
5239	5244	5245	5313	5318	5319	5368	5378	5383	5384	5452	5457	5458
5507	5517	5522	5523	5591	5596	5597	5646	5656	5661	5662	5730	5735
5736	5785	5795	5800	5801	5869	5874	5875	5924	5934	5939	5940	6008
6013	6014	6063	6073	6078	6079	6147	6152	6153	6202	6212	6217	6218
6286	6291	6292	6319	6387	6388	6389	6579	6693	6698	6703	6708	6713
6718	6738	6739	6762									
1888	1890											

DZRHBC.F11

CROSS REFERENCE TABLE -- USER SYMBOLS

SC = 100000

SCLK = 000010

SEARCH= 000031

SKIPIN 004636

SLEUTH 004652
CLM 001000

SUKH = DO1000

5N0500 010576

SP = 2000006

SPLIT 034410

SRO = 177572

SR1 = 177574

SR2 = 177576
SR3 = 177516

SX3 = 172916
STACK = 000750

STACK - 000730
START - 004214

STKLMT= 177774

SUPER 033226

SWR 001140

EUREC 000176

SWREG 000176

SWO = 000001

5400 = 000001
5401 = 000002

000002
000004

5402 == 000304
5403 == 000010

SW04 = 000020

SW05 = 000040

SW06 = 000100

SW07 = 000200
SW08 = 000400

SW08 = 000400
SW09 = 001000

SW1 = 000002

SW10 = 002000

SW11 = 004000

SW12 = 010000

SW13 = 020900
SW14 = 040000

SW14 = 040000
SW15 = 100000

SW13	=	100000
SW2	=	000004

SW3 = 000010

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[illegible]

[illegible]

M15

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 196
 DZRHBC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

TYPON = 104404	9107*													
TYP0S = 104403	9106*													
UPE = 020000	1495*	2088	3090	3212	3318	3372	3396	3445	3504	3553	3623	3727	3829	
	3931	4019	6711											
UPETRE 017306	3272	3277	3279	3281*										
US1 = 000001	1482*	6696												
US2 = 000002	1483*	6696												
US4 = 000004	1484*	6696												
VECA00 003406	1628*	1761*	1851*	5132*	6311*									
VOUS 033000	4971	4974*												
WATBIT 046302	2113	2118	2123	2128	2135	2140	2196	2206	2239	2279	2458	2476	2503	
	2526	2576	2633	2661	2685	2756	2807	2846	6540*					
WATFIV 010256	2275	2280	2284*											
WATFOR 010046	2255*													
WC 003444	1648*	2173*	2193*	2195	2199*	2203*	2204	2220*	2260*	2307*	2443*	2475	2478*	
	2499*	2502	2505*	2522*	2525	2529*	2578*	2618*	2646*	2670*	2729*	2785*	2824*	
	2879*	2963*	3059*	3181*	3287*	3378*	3486*	3592*	3696*	3798*	3900*	3996*	4061*	
	4110*	4160*	4210*	4265*	4318*	4371*	4424*	4477*	4530*	4583*	4636*	4689*	4742*	
	4795*	4848*	4901*	4956*	4991*	5053*	5088*	5153*	5211*	5286*	5350*	5425*	5489*	
	5564*	5628*	5703*	5767*	5842*	5906*	5981*	6045*	6120*	6184*	6259*	6341*	8414	
	8438	8440	8451											
WCE = 040000	1496*	2088	3090	3199	3248	3318	3409	3517	3623	3727	3829	3931	4019	
	5018	5115	6711											
WCEERR 033652	5077	5082	5084	5086*										
WCEHI = 010000	1508*	2072	3091	3319	3518	3624	5015	5106						
WCELO = 004000	1507*	2072	3091	3319	3518	3624	5009	5112						
WCEOWT 033424	5042	5047	5049	5051*										
WCERR1 007472	2170	2190*												
WCERR2 007556	2188	2202*												
WCETRE 016506	3165	3170	3172	3174*										
WCETST 016410	3149	3154	3156	3158*										
WHYFO 007234	2143*	2347	2746	2903	2925	2989	2994	2997	3076	3095	3105	3109	3114	
	3118	3198	3217	3227	3231	3236	3240	3304	3323	3333	3337	3342	3346	
	3395	3414	3424	3428	3433	3437	3503	3522	3532	3536	3541	3545	3609	
	3628	3638	3642	3647	3651	3713	3732	3742	3746	3751	3755	3815	3834	
	3844	3848	3853	3857	3917	3936	3946	3950	3955	3959	4013	4021	4030	
	4078	4082	4127	4131	4177	4181	4227	4231	4282	4286	4335	4339	4398	
	4392	4441	4445	4494	4498	4547	4551	4600	4604	4653	4657	4706	4710	
	4759	4763	4812	4816	4865	4869	4918	4922	4973	5008	5012	5070	5105	
	5109	5229	5239	5313	5368	5378	5452	5507	5517	5591	5646	5656	5730	
	5785	5795	5869	5924	5934	6008	6063	6073	6147	6202	6212	6286	6387	
WRCHO = 000051	1665*	3162	4977	5074										
WRCH1 = 000052	1666*													
WRCH2 = 000053	1667*													
WRCH3 = 000054	1668*													
WRCH4 = 000055	1669*													
WRCH5 = 000056	1670*													
WRCH6 = 000057	1671*													
WRITE0 = 000061	1685*	2865	2946	2948	3146	3468	3574	3678	3779	3780	4047	4096	4146	
	4196	4304	4410	4942	5039	5135	5262	5753	6321	6669				
WRITE1 = 000062	1686*													
WRITE2 = 000063	1687*	5540	5892											
WRITE3 = 000064	1688*													
WRITE4 = 000065	1689*	5818	6031											
WRITE5 = 000066	1690*													
WRITE6 = 000067	1691*	4357	4463	4516	4569	6096	6170							


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SERRTB 001226
SERRTY 074050
SERTTL 001112
$ESCAP 001214
$FILLC 001156
$FILLS 001155
$GDADR 001120
$GDDAT 001124
$GET42 046252
$GTSWR= ***** U
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$HIOCT 074732
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$ILLUP 073140
$INTAG 001136
$ITEMB 001114

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[illegible]

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	8960	8966	9035										
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	1782	1785	1796	1824	2048	2152	2167	2215	2253	2293	2356	2422	2471
	2558	2610	2711	2859	2937	3029	3139	3261	3367	3459	3567	3673	3774
	3878	3979	4041	4092	4142	4192	4245	4298	4351	4404	4457	4510	4563
	4616	4669	4722	4775	4828	4881	4934	5032	5127	5189	5254	5328	5393
	5467	5532	5606	5671	5745	5810	5884	5949	6023	6088	6162	6227	6300
	6397	6492	6498	6525	6531	6533	8550	8561	8562	8563	8564	8569	8581
	8583	8584	8587	8588	8589	8596	8597	8598	8609	8612	8615	8652	8656
	8927	8928	8929	8930	8938	8945	8950	8953	8961				
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\$TMP0 001176	546*												
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	2644*	2667*	2754*	2805*	2844*	6548	6564	6690*	6691*	6695*	6696*	6700*	6701*
	6705*	6706*	6710*	6711*	6715*	6716*							
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	3254	3261*	3360	3367*	3452	3459*	3561	3567*	3666	3673*	3768	3774*	3870
	3878*	3973	3979*	4034	4041*	4042	4085	4092*	4093	4134	4142*	4143	4184
	4192*	4193	4236	4245*	4246	4289	4298*	4299	4342	4351*	4352	4395	4404*
	4405	4448	4457*	4458	4501	4510*	4511	4554	4563*	4564	4607	4616*	4617
	4660	4669*	4670	4713	4722*	4723	4766	4775*	4776	4819	4828*	4829	4872
	4881*	4882	4925	4934*	5024	5032*	5121	5127*	5181	5189*	5246	5254*	5320
	5328*	5385	5393*	5459	5467*	5524	5532*	5598	5606*	5663	5671*	5737	5745*
	5802	5810*	5876	5884*	5941	5949*	6015	6023*	6080	6088*	6154	6162*	6219
	6227*	6293	6300*	6391	6397*								
\$TPB 001152	533*	8718*	8729										
\$TPFLG 001157	537*	8676	8729										
\$TPS 001150	532*	8716	8729										
\$TRAP 074734	1778	9081*											
\$TRAP2 074756	9092*	9103											
\$TRAP = 000011	9096*	9105*	9106*	9107*	9108*	9109*	9111	9112*	9113*	9114*			
\$TRAPD 074770	9086	9103*											
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ENDCOM	1	439													
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	2404	2406	2408	2410	2412	2457	2492	2519	2543	2549	2555	2592	2632	2660	2684
	2691	2745	2750	2750	2755	2801	2806	2840	2845	2902	2907	2911	2915	2921	2988
	2993	3006	3006	3006	3011	3015	3018	3075	3085	3102	3104	3108	3113	3117	3117
	3120	3194	3194	3207	3224	3226	3230	3235	3239	3242	3250	3303	3313	3330	3332
	3336	3341	3345	3348	3356	3394	3404	3421	3423	3427	3432	3436	3439	3447	3502
	3512	3529	3531	3535	3540	3544	3547	3555	3608	3618	3635	3637	3641	3646	3650
	3653	3661	3712	3722	3739	3741	3745	3750	3754	3757	3765	3814	3824	3841	3843
	3847	3852	3856	3859	3867	3916	3926	3943	3945	3949	3954	3958	3961	3969	4012
	4024	4029	4077	4081	4126	4130	4176	4180	4226	4230	4281	4285	4334	4338	4387
	4391	4440	4444	4493	4497	4546	4550	4599	4603	4652	4656	4705	4709	4758	4762
	4811	4815	4864	4868	4917	4921	4972	5007	5011	5017	5020	5069	5104	5108	5114
	5117	5138	5169	5173	5178	5228	5234	5237	5242	5243	5303	5306	5309	5312	5316
	5317	5367	5373	5376	5381	5382	5442	5445	5448	5451	5455	5456	5506	5512	5515
	5520	5531	5581	5594	5587	5590	5594	5595	5645	5651	5654	5659	5660	5720	5723
	5726	5739	5733	5734	5784	5790	5793	5798	5799	5859	5862	5865	5868	5872	5873
	5923	5939	5932	5937	5938	5998	6001	6004	6007	6011	6012	6062	6068	6071	6076
	6077	6137	6140	6143	6146	6150	6151	6201	6207	6210	6215	6216	6276	6279	6292
	6285	6289	6290	6337	6338	6359	6362	6365	6368	6373	6374	6375	6683		
ESCAPE	1	439													
GETPRI	1	439													
GETSWR	1	439													
MSG	1814	1817	2040	2042	2146	2148	2160	2163	2209	2211	2247	2249	2287	2289	2350
	2352	2415	2418	2461	2464	2560	2563	2500	2603	2701	2704	2852	2854	2929	2931
	3023	3025	3132	3135	3254	3256	3360	3362	3454	3560	3563	3665	3668	3768	3770
	3870	3872	3973	3975	4034	4036	4085	4087	4134	4136	4184	4186	4235	4238	4291
	4344	4397	4450	4503	4556	4609	4662	4715	4768	4821	4874	4925	4927	5024	5026
	5121	5123	5181	5183	5248	5322	5387	5461	5526	5600	5665	5739	5804	5878	5943
	6017	6082	6156	6221	6293	6295	6391	6393							
MULT	1	439													
NEWYST	1	439													
	2852	2929	3023	3133	3254	3360	3452	3561	3666	3768	3870	3973	4034	4085	4134
	4184	4236	4289	4342	4395	4448	4501	4554	4607	4660	4713	4766	4819	4872	4925
	5024	5121	5181	5246	5320	5385	5459	5524	5598	5663	5737	5802	5876	5941	6015
	6080	6154	6219	6293	6391										
POP	1	439	8641	8642	8859	9068									
PUSH	1	439	8622	8628	8818	9047									
REGCLR	1751	2215	2255												
REPORT	1	439													
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SAVE	1751	2172	2219	2259	2306	2441	2477	2504	2527	2577	2617	2645	2668	2728	2784
	2822	2878	2962	3058	3180	3286	3377	3485	3591	3695	3797	3899	3995	4060	4109
	4159	4209	4264	4317	4370	4423	4476	4529	4582	4635	4688	4741	4794	4847	4900
	4955	4990	5052	5087	5152	5210	5285	5349	5424	5488	5563	5627	5702	5766	5841
	5905	5980	6044	6119	6183	6258	6339								
SCOPE	334	1823	2047	2151	2166	2214	2252	2292	2355	2421	2470	2567	2609	2710	2858
	2936	3028	3138	3260	3366	3458	3566	3672	3773	3877	3978	4040	4091	4141	4191
	4244	4297	4350	4403	4456	4509	4562	4615	4668	4721	4774	4827	4880	4933	5031
	5126	5188	5253	5327	5392	5466	5531	5605	5670	5744	5809	5883	5948	6022	6087
	6161	6226	6299	6396	6496										
SETPRI	1	439													

SETTRA	9096	9105	9106	9107	9108	9111	9112	9113							
SETUP	1	439	1766												
SKIP	1	439	2254	2425	2569	4042	4093	4143	4193	4246	4299	4352	4405	4458	4511
	4564	4617	4670	4723	4776	4829	4882								
SLASH	1	439													
SPACE	439														
STARS	1	439	454	490	493	503	558	1469	1631	1633	1650	1652	1659	1662	1664
	1673	1683	1693	1697	1702	1704	1709	1712	1717	1719	1733	1735	1748	1763	1815
	1822	2040	2046	2051	2055	2060	2064	2146	2150	2161	2165	2209	2213	2247	2251
	2287	2291	2350	2354	2416	2420	2462	2469	2561	2566	2601	2608	2702	2709	2852
	2857	2929	2935	3023	3027	3133	3137	3254	3259	3360	3365	3452	3457	3561	3565
	3666	3671	3768	3772	3870	3876	3973	3977	4034	4039	4085	4090	4134	4140	4184
	4190	4236	4243	4289	4296	4342	4349	4395	4402	4448	4455	4501	4508	4554	4561
	4607	4614	4660	4667	4713	4720	4766	4773	4819	4826	4872	4879	4925	4932	5024
	5030	5121	5125	5181	5187	5246	5252	5320	5326	5385	5391	5459	5465	5524	5530
	5598	5604	5663	5669	5737	5743	5802	5808	5876	5882	5941	5947	6015	6021	6080
	6086	6154	6160	6219	6225	6293	6298	6391	6395	6488	6536	6538	6588	6590	6615
	6617	6665	6667	6685	6687	6720	6722	6741	6744	6764	6767	6771	6773	7203	7205
	8490	8555	8618	8634	8661	8731	8808	8875	8922	8963	8969	8998	9027	9075	
SWRSU	1	439	1787												
TIME	2040	2294	2325	2716	2772	2810	2866	2950	3041	3147	3163	3270	3469	3575	3679
	3781	3883	3983	4048	4097	4147	4197	4252	4305	4358	4411	4464	4517	4570	4623
	4676	4729	4782	4835	4888	4943	4978	5040	5075	5140	5198	5273	5337	5412	5476
	5551	5615	5690	5754	5829	5893	5968	6032	6107	6171	6246	6323	6669		
TRESC	2851	3054	3176	3282	3373	3481	3587	3691	3793						
TRMTRP	9096														
TYPBIN	1	439													
TYPOFC	1	439	6511	6518	6580	6584									
TYPNAM	1	439													
TYPNUM	1	439													
TYPOCS	1	439													
TYPOCT	1	439	1975	6417	6429	6441	6452	6463	6603	6610	6630	6637	6646	6653	6660
	6756	8887	8911												
TYPTXT	1	439	1805	1809	1840	1846	1852	1890	1911	1932	1953	1971	2017	2033	2381
	6409	6413	6425	6437	6448	6459	6507	6514	6552	6567	6592	6597	6605	6619	6624
	6632	6641	6648	6655	6752	6758									
XPCYSA	1751	5254	5393	5532	5671	5810	5949	6088	6227						
SSCMRE	501	540	541	542	543	544	545								
SSCMTH	501	546	547	548	549	550	551								
SSESCA	1	439													
SSNEWT	1	439	1815	2040	2146	2161	2209	2247	2287	2350	2416	2462	2561	2601	2702
	2852	2929	3023	3133	3254	3360	3452	3561	3666	3768	3970	3973	4034	4085	4134
	4184	4236	4289	4342	4395	4448	4501	4554	4607	4660	4713	4766	4819	4872	4925
	5024	5121	5181	5246	5320	5385	5459	5524	5598	5663	5737	5802	5876	5941	6015
	6080	6154	6219	6293	6391										
SSSET	9096	9105	9106	9107	9108	9111	9112	9113							
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.EQUAT	1	307	329												
.HEAD	1	307	308												
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.SETUP	1	307	1765												
.SWRHI	1	307	318												
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.SACT1	1	307	491												
.SAPTE	1														

H16

MASSBUS AUTO AND RAIL DIAGNOSTIC CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

MACY 11 27 (732) 01-OCT-76 09:03 PAGE 206

ADD ASL BCC BEC	1980 9890 9891 9892 9893 9894 9895 9896 9897 9898 9899 9900 9901 9902 9903 9904 9905 9906 9907 9908 9909 9910 9911 9912 9913 9914 9915 9916 9917 9918 9919 9920 9921 9922 9923 9924 9925 9926 9927 9928 9929 9930 9931 9932 9933 9934 9935 9936 9937 9938 9939 9940 9941 9942 9943 9944 9945 9946 9947 9948 9949 9950 9951 9952 9953 9954 9955 9956 9957 9958 9959 9960 9961 9962 9963 9964 9965 9966 9967 9968 9969 9970 9971 9972 9973 9974 9975 9976 9977 9978 9979 9980 9981 9982 9983 9984 9985 9986 9987 9988 9989 9990 9991 9992 9993 9994 9995 9996 9997 9998 9999 10000	1985 8893 8894 8895 8896 8897 8898 8899 8900 8901 8902 8903 8904 8905 8906 8907 8908 8909 8910 8911 8912 8913 8914 8915 8916 8917 8918 8919 8920 8921 8922 8923 8924 8925 8926 8927 8928 8929 8930 8931 8932 8933 8934 8935 8936 8937 8938 8939 8940 8941 8942 8943 8944 8945 8946 8947 8948 8949 8950 8951 8952 8953 8954 8955 8956 8957 8958 8959 8960 8961 8962 8963 8964 8965 8966 8967 8968 8969 8970 8971 8972 8973 8974 8975 8976 8977 8978 8979 8980 8981 8982 8983 8984 8985 8986 8987 8988 8989 8990 8991 8992 8993 8994 8995 8996 8997 8998 8999 9000 9001 9002 9003 9004 9005 9006 9007 9008 9009 9010 9011 9012 9013 9014 9015 9016 9017 9018 9019 9020 9021 9022 9023 9024 9025 9026 9027 9028 9029 9030 9031 9032 9033 9034 9035 9036 9037 9038 9039 9040 9041 9042 9043 9044 9045 9046 9047 9048 9049 9050 9051 9052 9053 9054 9055 9056 9057 9058 9059 9060 9061 9062 9063 9064 9065 9066 9067 9068 9069 9070 9071 9072 9073 9074 9075 9076 9077 9078 9079 9080 9081 9082 9083 9084 9085 9086 9087 9088 9089 9090 9091 9092 9093 9094 9095 9096 9097 9098 9099 9100	1987 8894 8895 8896 8897 8898 8899 8900 8901 8902 8903 8904 8905 8906 8907 8908 8909 8910 8911 8912 8913 8914 8915 8916 8917 8918 8919 8920 8921 8922 8923 8924 8925 8926 8927 8928 8929 8930 8931 8932 8933 8934 8935 8936 8937 8938 8939 8940 8941 8942 8943 8944 8945 8946 8947 8948 8949 8950 8951 8952 8953 8954 8955 8956 8957 8958 8959 8960 8961 8962 8963 8964 8965 8966 8967 8968 8969 8970 8971 8972 8973 8974 8975 8976 8977 8978 8979 8980 8981 8982 8983 8984 8985 8986 8987 8988 8989 8990 8991 8992 8993 8994 8995 8996 8997 8998 8999 9000 9001 9002 9003 9004 9005 9006 9007 9008 9009 9010 9011 9012 9013 9014 9015 9016 9017 9018 9019 9020 9021 9022 9023 9024 9025 9026 9027 9028 9029 9030 9031 9032 9033 9034 9035 9036 9037 9038 9039 9040 9041 9042 9043 9044 9045 9046 9047 9048 9049 9050 9051 9052 9053 9054 9055 9056 9057 9058 9059 9060 9061 9062 9063 9064 9065 9066 9067 9068 9069 9070 9071 9072 9073 9074 9075 9076 9077 9078 9079 9080 9081 9082 9083 9084 9085 9086 9087 9088 9089 9090 9091 9092 9093 9094 9095 9096 9097 9098 9099 9100	2376 9056 9057 9058 9059 9060 9061 9062 9063 9064 9065 9066 9067 9068 9069 9070 9071 9072 9073 9074 9075 9076 9077 9078 9079 9080 9081 9082 9083 9084 9085 9086 9087 9088 9089 9090 9091 9092 9093 9094 9095 9096 9097 9098 9099 9100	2377 9058 9059 9060 9061 9062 9063 9064 9065 9066 9067 9068 9069 9070 9071 9072 9073 9074 9075 9076 9077 9078 9079 9080 9081 9082 9083 9084 9085 9086 9087 9088 9089 9090 9091 9092 9093 9094 9095 9096 9097 9098 9099 9100	6471 9060 9061 9062 9063 9064 9065 9066 9067 9068 9069 9070 9071 9072 9073 9074 9075 9076 9077 9078 9079 9080 9081 9082 9083 9084 9085 9086 9087 9088 9089 9090 9091 9092 9093 9094 9095 9096 9097 9098 9099 9100	6474 9085 9086 9087 9088 9089 9090 9091 9092 9093 9094 9095 9096 9097 9098 9099 9100	6476 9086 9087 9088 9089 9090 9091 9092 9093 9094 9095 9096 9097 9098 9099 9100	6733 9087 9088 9089 9090 9091 9092 9093 9094 9095 9096 9097 9098 9099 9100	8686 9088 9089 9090 9091 9092 9093 9094 9095 9096 9097 9098 9099 9100	8757 9089 9090 9091 9092 9093 9094 9095 9096 9097 9098 9099 9100	8767 9090 9091 9092 9093 9094 9095 9096 9097 9098 9099 9100	8838 9091 9092 9093 9094 9095 9096 9097 9098 9099 9100	8895 9092 9093 9094 9095 9096 9097 9098 9099 9100	9063 9093 9094 9095 9096 9097 9098 9099 9100
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BMI	1804	2066	2254	2494	2635	2758	2862	2940	3014	3036	3370	3570	3777	3879	4042
	4093	4143	4193	4246	4299	4352	4405	4458	4511	4564	4617	4670	4723	4776	4829
	4882	5130	5195	5259	5334	5398	5473	5537	5612	5676	5751	5815	5890	5954	6029
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	2097	2101	2105	2170	2217	2257	2296	2298	2301	2322	2327	2329	2332	2342	2357
	2361	2380	2425	2432	2435	2569	2718	2720	2723	2744	2748	2774	2776	2779	2900
	2812	2814	2817	2839	2868	2870	2873	2894	2910	2952	2954	2957	2980	3005	3043
	3045	3048	3074	3078	3082	3084	3088	3099	3101	3122	3124	3142	3149	3151	3154
	3165	3167	3170	3196	3200	3204	3206	3210	3221	3223	3244	3246	3264	3272	3274
	3277	3302	3306	3310	3312	3316	3327	3329	3350	3352	3393	3397	3401	3403	3407
	3418	3420	3441	3443	3471	3473	3476	3501	3505	3509	3511	3515	3526	3528	3549
	3551	3577	3579	3582	3607	3611	3615	3617	3621	3632	3634	3655	3657	3681	3683
	3686	3711	3715	3719	3721	3725	3736	3738	3759	3761	3783	3785	3788	3813	3817
	3821	3823	3827	3838	3840	3861	3863	3885	3887	3890	3915	3919	3923	3925	3929
	3940	3942	3963	3965	3985	3987	3990	4011	4050	4052	4055	4076	4099	4101	4104
	4125	4129	4149	4151	4154	4175	4199	4201	4204	4225	4229	4254	4256	4259	4280
	4307	4309	4312	4333	4360	4362	4365	4386	4413	4415	4418	4439	4466	4468	4471
	4492	4519	4521	4524	4545	4549	4572	4574	4577	4598	4625	4627	4630	4651	4655
	4678	4680	4683	4704	4731	4733	4736	4757	4784	4786	4789	4810	4814	4837	4839
	4842	4863	4890	4892	4895	4916	4920	4945	4947	4950	4971	4980	4982	4985	5006
	5010	5014	5019	5042	5044	5047	5068	5077	5079	5082	5103	5107	5111	5116	5137
	5142	5144	5147	5168	5172	5200	5202	5205	5227	5267	5275	5277	5280	5302	5305
	5339	5341	5344	5366	5406	5414	5416	5419	5441	5444	5478	5480	5483	5505	5545
	5553	5555	5558	5580	5583	5617	5619	5622	5644	5684	5692	5694	5697	5719	5722
	5756	5758	5761	5783	5823	5831	5833	5836	5858	5861	5895	5897	5900	5922	5962
	5970	5972	5975	5997	6000	6034	6036	6039	6061	6101	6109	6111	6114	6136	6139
	6173	6175	6178	6200	6240	6248	6250	6253	6275	6278	6318	6325	6327	6330	6336
	6356	6358	6377	6384	6402	6405	6541	6543	6545	6557	6572	6671	6673	6676	6727
	6729	6749	8570	8599	8640	8683	8691	8699	8713	8720	8782	8840	8885	8907	8946
BPL	8984	8990	9012	9018											
BR	8677	8717	8780	8826	8856	8951	8980	8986							
	1752	1756	1796	1806	1810	1841	1847	1853	1892	1913	1934	1955	1972	1983	2004
	2019	2034	2080	2087	2095	2102	2109	2114	2119	2124	2131	2136	2304	2335	2364
	2378	2382	2387	2389	2391	2393	2395	2397	2399	2401	2403	2405	2407	2409	2411
	2496	2596	2637	2726	2765	2782	2820	2876	2947	2960	3032	3051	3086	3103	3107
	3112	3116	3119	3157	3173	3208	3225	3229	3234	3238	3241	3280	3314	3331	3335
	3340	3344	3347	3405	3422	3426	3431	3435	3438	3479	3513	3530	3534	3539	3543
	3546	3585	3619	3636	3640	3645	3649	3652	3689	3723	3740	3744	3749	3753	3756
	3791	3825	3842	3846	3851	3855	3858	3893	3927	3944	3948	3953	3957	3960	3993
	4023	4058	4107	4157	4207	4262	4315	4368	4421	4474	4527	4580	4633	4686	4739
	4792	4845	4898	4953	4988	5050	5085	5150	5208	5283	5347	5422	5465	5561	5625
	5700	5764	5839	5903	5978	6042	6117	6181	6256	6320	6333	6410	6414	6426	6438
	6449	6460	6508	6515	6553	6562	6568	6577	6583	6587	6594	6598	6606	6621	6625
	6633	6642	6649	6656	6679	6753	6759	8572	8578	8581	8594	8597	8632	8654	8679
CLR	8696	8706	8715	8722	8758	8773	8794	8837	8854	8890	8917	8991	9014	9064	
	1750	1753	1754	1757	1762	1769	1782	1783	1832	1834	1839	1872	1876	1880	2022
	2031	2049	2108	2177	2178	2224	2225	2236	2264	2265	2276	2294	2299	2311	2312
	2325	2330	2338	2370	2447	2448	2482	2483	2509	2510	2533	2534	2582	2583	2622
	2623	2650	2651	2674	2675	2713	2716	2721	2733	2734	2763	2772	2777	2789	2790
	2810	2815	2828	2829	2866	2871	2883	2884	2901	2906	2914	2950	2955	2967	2968
	3041	3046	3063	3064	3096	3147	3152	3163	3168	3185	3186	3218	3270	3275	3291
	3292	3324	3382	3383	3415	3469	3474	3490	3491	3523	3575	3580	3596	3597	3629
	3679	3684	3700	3701	3733	3781	3786	3802	3803	3835	3883	3888	3904	3905	3937
	3983	3988	4000	4001	4022	4048	4053	4065	4066	4097	4102	4114	4115	4147	4152
	4164	4165	4197	4202	4214	4215	4252	4257	4269	4270	4305	4310	4322	4323	4358

	4363	4375	4376	4411	4416	4428	4429	4464	4469	4481	4482	4517	4522	4534	4535
	4570	4575	4587	4588	4623	4628	4640	4641	4676	4681	4693	4694	4729	4734	4746
	4747	4782	4787	4799	4800	4835	4840	4852	4853	4888	4893	4905	4906	4943	4948
	4960	4961	4978	4983	4995	4995	5040	5045	5057	5058	5075	5080	5092	5093	5139
	5140	5145	5157	5158	5198	5203	5215	5216	5264	5273	5278	5290	5291	5337	5342
	5354	5355	5403	5412	5417	5429	5430	5476	5481	5493	5494	5542	5551	5556	5568
	5569	5615	5620	5632	5633	5681	5690	5695	5707	5708	5754	5759	5771	5772	5820
	5829	5834	5846	5847	5893	5898	5910	5911	5959	5968	5973	5985	5986	6032	6037
	6049	6050	6098	6107	6112	6124	6125	6171	6176	6188	6189	6237	6246	6251	6263
	6264	6303	6304	6305	6323	6328	6345	6346	6382	6422	6480	6497	6498	6522	6546
	6563	6669	6674	8596	8610	8638	8771	8829	8832	8883	9052	9053			
CLRB	6725	6751	8595	8695	8721	8858	9019								
CMP	1770	1793	1874	1878	1882	1887	1981	1995	2005	2029	2037	2155	2169	2216	2256
	2324	2356	2362	2372	2374	2439	2473	2500	2523	2547	2553	2573	2593	2614	2642
	2665	2689	2695	2752	2759	2766	2802	2842	2897	2904	2909	2982	2984	3079	3087
	3201	3209	3307	3315	3398	3406	3506	3514	3612	3620	3716	3724	3818	3826	3920
	3928	5175	5230	5266	5304	5307	5310	5369	5405	5443	5446	5449	5508	5544	5582
	5585	5588	5647	5683	5721	5724	5727	5786	5822	5860	5863	5866	5925	5961	5999
	6002	6005	6064	6100	6138	6141	6144	6203	6239	6277	6280	6283	6360	6363	6399
	6401	6404	6407	6469	6559	6574	8579	8603	8850	8983	8989	8992	8994	9007	
CMPB	1999	2058	2431	6728	8585	8589	8688	8690	8698	8719	8723	9011	9017		
COM	1751	1755	1758	2032	2050	4974	5071								
DEC	2434	6501	8891												
DECB	8702	8705	8779	8790											
ENT	333														
HALT	445	8631	8653	8678	8952										
INC	1990	2297	2302	2328	2333	2341	2550	2692	2719	2724	2761	2768	2775	2780	2813
	2818	2869	2874	2953	2958	3044	3049	3150	3155	3166	3171	3273	3278	3472	3477
	3578	3583	3682	3687	3784	3789	3886	3891	3986	3991	4051	4056	4100	4105	4150
	4155	4200	4205	4255	4260	4308	4313	4361	4366	4414	4419	4467	4472	4520	4525
	4573	4578	4626	4631	4679	4684	4732	4737	4785	4790	4838	4843	4891	4896	4946
	4951	4981	4986	5043	5048	5078	5083	5143	5148	5201	5206	5265	5276	5281	5340
	5345	5404	5415	5420	5479	5484	5543	5554	5559	5618	5623	5682	5693	5698	5757
	5762	5821	5832	5837	5896	5901	5960	5971	5976	6035	6040	6099	6110	6115	6174
	6179	6238	6249	6254	6326	6331	6378	6385	6398	6479	6481	6499	6561	6576	6672
	6677	8602	8639	8785	8793	8836	8941								
INCB	8607	8725	8935												
LOT	334														
JMP	449	451	453	1759	1833	1837	1838	1859	1871	1875	1879	1883	1886	1889	1901
	1904	1907	1910	1922	1925	1928	1931	1943	1946	1949	1952	1964	1965	1968	1998
	2002	2008	2023	2028	2071	2075	2141	2142	2143	2179	2189	2197	2201	2226	2240
	2266	2280	2313	2385	2449	2484	2511	2535	2584	2624	2652	2676	2735	2762	2769
	2791	2830	2885	2908	2913	2919	2969	2981	2990	2995	2998	3001	3003	3008	3012
	3017	3065	3097	3187	3219	3293	3325	3371	3384	3416	3463	3492	3524	3598	3630
	3702	3734	3804	3836	3880	3906	3938	4002	4028	4067	4116	4166	4216	4271	4324
	4377	4430	4483	4536	4589	4642	4695	4748	4801	4854	4907	4937	4962	4997	5034
	5059	5094	5159	5170	5174	5217	5236	5292	5356	5375	5431	5495	5514	5570	5634
	5653	5709	5773	5792	5848	5912	5931	5987	6051	6070	6126	6190	6209	6265	6347
	6381	6386	6403	6406	6421	6432	6443	6454	6465	6472	6485	6531			
JSR	2039	2110	2113	2115	2118	2120	2123	2125	2128	2132	2135	2137	2140	2145	2158
	2196	2206	2207	2208	2239	2245	2246	2279	2285	2286	2347	2348	2349	2413	2414
	2458	2459	2460	2476	2503	2526	2556	2558	2576	2597	2598	2633	2661	2685	2698
	2699	2746	2756	2807	2846	2847	2848	2903	2925	2926	2927	2989	2994	2997	3020
	3021	3076	3095	3105	3109	3114	3118	3129	3130	3198	3217	3227	3231	3236	3240
	3251	3252	3304	3323	3333	3337	3342	3346	3357	3358	3395	3414	3424	3428	3433
	3437	3448	3449	3503	3522	3532	3536	3541	3545	3556	3557	3609	3628	3638	3642

K16

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRMBC.F11

CROSS REFERENCE TABLE

MACY11 27(732) 01-OCT-76 09:03 PAGE 209
-- PERMANENT SYMBOLS

MOV

3647	3651	3662	3663	3713	3732	3742	3746	3751	3755	3766	3767	3815	3834	3844
3848	3853	3857	3868	3869	3917	3936	3946	3950	3955	3959	3970	3971	4013	4021
4030	4031	4032	4078	4082	4083	4084	4127	4131	4132	4133	4177	4181	4182	4183
4227	4231	4232	4233	4282	4286	4287	4288	4335	4339	4340	4341	4388	4392	4393
4394	4441	4445	4446	4447	4494	4498	4499	4500	4547	4551	4552	4553	4600	4604
4605	4606	4653	4657	4658	4659	4706	4710	4711	4712	4759	4763	4764	4765	4812
4816	4817	4818	4865	4869	4870	4871	4918	4922	4923	4924	4973	5008	5012	5021
5022	5070	5105	5109	5118	5119	5179	5180	5229	5239	5244	5245	5313	5318	5319
5368	5378	5383	5384	5452	5457	5458	5507	5517	5522	5523	5591	5596	5597	5646
5656	5661	5662	5730	5735	5736	5785	5795	5800	5801	5869	5874	5875	5924	5934
5939	5940	6008	6013	6014	6063	6073	6078	6079	6147	6152	6153	6202	6212	6217
6218	6286	6291	6292	6319	6387	6388	6389	6526	6738	8697	8704	8711	8947	
1760	1761	1768	1772	1774	1775	1776	1777	1778	1779	1780	1781	1785	1786	1789
1790	1791	1792	1797	1799	1800	1801	1824	1825	1826	1827	1828	1829	1845	1851
1857	1860	1861	1863	1864	1866	1867	1869	1870	1873	1877	1881	1896	1905	1906
1917	1926	1927	1938	1947	1948	1959	1966	1967	1969	1970	1975	1977	1978	1979
1984	1986	1988	1989	1991	1992	1993	2006	2009	2012	2013	2014	2016	2024	2025
2026	2030	2038	2048	2056	2057	2111	2116	2121	2126	2133	2138	2152	2153	2154
2167	2168	2171	2172	2173	2174	2180	2181	2182	2183	2184	2185	2186	2192	2193
2195	2198	2199	2202	2203	2204	2215	2218	2219	2220	2221	2227	2228	2229	2230
2231	2232	2233	2237	2241	2242	2255	2258	2259	2260	2261	2267	2268	2269	2270
2271	2272	2273	2277	2281	2282	2293	2306	2307	2308	2314	2315	2316	2317	2318
2319	2320	2337	2358	2366	2367	2368	2371	2422	2423	2426	2427	2428	2429	2430
2436	2437	2438	2442	2443	2444	2450	2451	2452	2453	2454	2455	2456	2471	2472
2475	2477	2478	2479	2485	2486	2487	2488	2489	2490	2491	2497	2498	2499	2502
2504	2505	2506	2512	2513	2514	2515	2516	2517	2518	2520	2521	2522	2525	2528
2529	2530	2536	2537	2538	2539	2540	2541	2542	2544	2545	2551	2557	2570	2571
2572	2575	2577	2578	2579	2585	2586	2587	2588	2589	2590	2591	2611	2612	2613
2616	2617	2618	2619	2625	2626	2627	2628	2629	2630	2631	2638	2640	2641	2644
2645	2646	2647	2653	2654	2655	2656	2657	2658	2659	2662	2663	2664	2667	2669
2670	2671	2677	2678	2679	2680	2681	2682	2683	2686	2687	2693	2714	2715	2728
2729	2730	2736	2737	2738	2739	2740	2741	2742	2749	2751	2754	2770	2771	2784
2785	2786	2792	2793	2794	2795	2796	2797	2798	2804	2805	2808	2809	2823	2824
2825	2831	2832	2833	2834	2835	2836	2837	2841	2844	2859	2860	2863	2864	2865
2878	2879	2880	2886	2887	2888	2889	2890	2891	2892	2937	2941	2942	2943	2946
2962	2963	2964	2970	2971	2972	2973	2974	2975	2976	3031	3034	3037	3038	3039
3040	3053	3054	3058	3059	3060	3066	3067	3068	3069	3070	3071	3072	3089	3090
3091	3092	3093	3094	3139	3140	3143	3144	3145	3146	3159	3160	3161	3162	3175
3176	3180	3181	3182	3188	3189	3190	3191	3192	3193	3194	3211	3212	3213	3214
3215	3216	3261	3262	3265	3266	3267	3268	3269	3282	3286	3287	3288	3294	3295
3296	3297	3298	3299	3300	3317	3318	3319	3320	3321	3322	3368	3372	3373	3377
3378	3379	3385	3386	3387	3388	3389	3390	3391	3408	3409	3410	3411	3412	3413
3460	3464	3465	3466	3467	3468	3481	3485	3486	3487	3493	3494	3495	3496	3497
3498	3499	3516	3517	3518	3519	3520	3521	3568	3571	3572	3573	3574	3587	3591
3592	3593	3599	3600	3601	3602	3603	3604	3605	3622	3623	3624	3625	3626	3627
3674	3675	3676	3677	3678	3691	3695	3696	3697	3703	3704	3705	3706	3707	3708
3709	3726	3727	3728	3729	3730	3731	3774	3775	3778	3779	3780	3793	3797	3798
3799	3805	3806	3807	3808	3809	3810	3811	3828	3829	3830	3831	3832	3833	3881
3895	3899	3900	3901	3907	3908	3909	3910	3911	3912	3913	3930	3931	3932	3933
3934	3935	3979	3980	3981	3982	3995	3996	3997	4003	4004	4005	4006	4007	4008
4009	4018	4019	4020	4043	4044	4045	4046	4047	4060	4061	4062	4068	4069	4070
4071	4072	4073	4074	4094	4095	4096	4109	4110	4111	4117	4118	4119	4120	4121
4122	4123	4144	4145	4146	4159	4160	4161	4167	4168	4169	4170	4171	4172	4173
4194	4195	4196	4209	4210	4211	4217	4218	4219	4220	4221	4222	4223	4247	4248
4249	4250	4251	4264	4265	4266	4272	4273	4274	4275	4276	4277	4278	4300	4301
4302	4303	4304	4317	4318	4319	4325	4326	4327	4328	4329	4330	4331	4353	4354

M16

MASSBUS RMTD AND RH11 DIAGNOSTIC
DZRMBC.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

MACY11 27(732) 01-OCT-76 09:03 PAGE 211

RESET	6525														
ROL	1858	2433	2495	2595	2636	2764	6731	8772	8774	8775	8776	8778	9057	9059	9061
ROR	6558	6573													
RTI	1798	6613	6663	6770	8614	8652	8687	8800	8867	8960	8997	9025	9071	9094	
RTS	2144	6579	6684	6693	6698	6703	6708	6713	6718	6739	6762	8727	8910	9087	
SUB	6602	6629	8834	8943											
TRAP	9096	9105	9106	9107	9108	9111	9112	9113							
TST	1803	1830	1835	1862	1865	1868	1884	1899	1902	1908	1920	1923	1929	1941	1944
	1950	1962	1994	2003	2010	2065	2067	2076	2083	2091	2098	2106	2129	2175	2187
	2190	2222	2234	2253	2262	2274	2309	2359	2360	2365	2424	2445	2480	2493	2507
	2531	2568	2580	2620	2634	2648	2672	2731	2757	2787	2826	2861	2881	2895	2899
	2939	2944	2965	2977	2986	2991	3009	3013	3029	3035	3061	3141	3183	3263	3289
	3369	3380	3461	3488	3569	3594	3698	3776	3800	3878	3902	3998	4041	4063	4092
	4112	4142	4162	4192	4212	4245	4267	4298	4320	4351	4373	4404	4426	4457	4479
	4510	4532	4563	4585	4616	4638	4669	4691	4722	4744	4775	4797	4828	4850	4881
	4903	4935	4958	4993	5032	5055	5090	5129	5155	5194	5213	5232	5258	5288	5333
	5352	5371	5397	5427	5472	5491	5510	5536	5566	5611	5630	5649	5675	5705	5750
	5769	5788	5814	5844	5889	5908	5927	5953	5983	6028	6047	6066	6092	6122	6167
	6186	6205	6231	6261	6306	6313	6315	6343	6366	6376	6383	6423	6423	6444	6455
	6483	6550	6565	6639	8576	8600	8684	8692	8714	8783	8839	8849	8914	8950	8956
	9065	9083													
TSTB	1897	1918	1939	1960	3123	3245	3251	3442	3550	3656	3760	3862	3964	5013	5110
	5171	5176	5240	5314	5379	5453	5518	5592	5657	5731	5796	5870	5935	6009	6074
.ASCII	6148	6213	6287	6369	6746	8587	8676	8716	8841	8855	8979	8985			
	555	556	7241	7248	7317	7393	7481	7488	7557	7571	7594	7601	7613	7620	7657
	7679	7690	7719	7759	7770	7781	7791	7820	7855	7898	7922	7932	7948	7967	7987
	7997	8008	8019	8029	8039	8050	8059	8069	8081	8090	8208	8222	8236	8250	8264
	8277	8287	8296	8310	8322	8330	8402								
.ASCII2	554	557	1808	1812	1843	1849	1855	1894	1915	1936	1957	1974	2021	2036	2384
	6412	6416	6428	6440	6451	6462	6510	6517	6555	6570	6596	6600	6608	6623	6627
	6635	6644	6651	6658	6755	6761	6775	6781	6785	6791	6797	6802	6807	6812	6819
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E01

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 215
DZRHBC.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

*DZRHBC, DZRHBC, SEQ/SOL/CRF/PAGNUM/NL:TOC=SYSMAC.SML(400,1066),DZRHBC(400,4571)
RUN-TIME: 70 105 17 SECONDS
RUN-TIME RATIO: 406/194=2.0
CORE USED: 38K (75 PAGES)